The Builder.

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The Materials of the Architect.

SELECTION of materials for architectural use is a subject that so continually demands the attention of the architect, the engineer, and the builder, either directly or impliedly, that it is desirable from time to time to review our knowledge of the subject, and to see how far new discoveries, or local or even temporary causes, may tend to modify our practice.

The chief considerations which should regulate the selection of material for any structure are, on the one hand, hygienic qualities, durability, and beauty; and, on the other hand, economy. We place these qualities in two distinct categories, because it is thus, for the most part, that they are regarded; whether properly or improperly remains to be seen. Under the head of economy rank the questions of local convenience and supply; and these again are often closely connected with the sanitary qualities of a material, whether as a conductor or non-conductor of heat, an absorbent or non-absorbent of moisture, or with reference to qualities yet more subtle, as to which scientific investigation is yet in its infancy. But there seems to be good reason to hold that, apart from the physical properties to which we have referred, there are others the nature of which we have as yet been unable to grasp, but the effect of which is more direct on human health than may be at first imagined. We see this very clearly marked in the selection of site. Apart from any question of drainage, there is a difference, which we will, for the sake of expressing what we mean, speak of as of something resembling a magnetic or electric character, directly due to the chemical nature of the soil, which is most sensibly perceived by delicate or unhealthy persons, and which we may thus be justified in regarding as of some importance to us all. Such, for instance, is the difference experienced by many persons between residing on a clay, a sand, or a limestone soil. This cannot be attributed altogether to hygrometric causes. For we may instance the "rab" of Pembrokeshire, which is a species of stratified clay, so indurated that it breaks into small fragments that may be used as gravel for paths and footways. The soil above is dry from the innumerable fissures of this geological rock. And yet the peculiar effect of clay soil on delicate health is experienced by those who reside on the rab, and who give attention to such subjects. Again, those who have resided on a volcanic soil, such as the Italian *tufa*, are well aware of the extreme fatigue which attends walking on the surface. This is not a question of latitude and solar heat; for on limestone soils, in the immediate vicinity, this special fatigue is unfelt. We have here a direct illustration of the relation between soil, site, and structural materials. When in our own country, the natural asphaltes which we import are used for pavements or roadway, something of the fatigue experienced on the *tufa* soil may be detected by the pedestrian. On the other hand, a marble floor, or a marble staircase, in a *tufa* country, gives a freshness and vivacity to those who command such a domestic luxury that is well known to persons of experience; and which is not at all dependent on causes to be detected by the thermometer.

There are many things which lead us to suppose that there is something specially akin to human health in the earth, whether we regard the mass of the planet or the mixture of various elements that forms good agricultural soil. The marvellous powers of earth as a disinfectant, though long known, have been only recently brought into prominent notice. Lime and clay each has its special value; and the experiments that are in progress as to the deodorisation of sewage by the admixture of these simple materials deserve attention. Again, the benefit to health that is often obtained by sending a sickly child to follow the track of the newly-turned furrow, is not a mere result of air and exercise. The warmth and substantial comfort of a turf hut, such as those which rise, like mushroom cities, along the course of great public works, cannot be spoken of as they deserve, except by those who, like ourselves, have made experience of them. They have, no doubt, like thatched roofs, their special disadvantages. We are not about to advocate a return to the aboriginal wigwam; but we say that there is so much that is good in this rudest form of dwelling, that it is well worth the attention of the builder how far earth that is thoroughly dry and protected from moisture may be rendered more available than is our present custom for increasing the comfort and sanitary excellence of our dwellings.

Earth, it may be replied, is what we *do* use, in the greater part of England, in the form of brick. The reply is not exactly correct, as the use of clay for the material of bricks is the selection of the species of natural soil which is least favourable to human health for the staple of our building materials. Yet, even so, there are special advantages proper to brick. When well burnt, it is by far the most durable of materials. Neither metal nor stone can compare with it in this respect; and not only is this true with reference to durability, under ordinary circumstances, but it is especially true with regard to the terrible casualty of fire. It is on evidence, from the results of the operations of the Fire Brigade, that neither stone nor iron can be relied on when exposed to great heat. The stone flies, the cast iron cracks, the wrought iron bends and yields. In transmitted heat alone,—that is to say, great elevation of temperature without actual exposure to flame,—a wooden staircase has been found safer than a stone one. Solid beams of wood are considered, by the experience of the Fire Brigade, far more reliable than iron standards. Again, the superiority of a tile roof, for the maintenance of a mean temperature in a house, over one of slate, is very great. In this case, indeed, it is rather owing to the relative thickness of the roofing stratum than to any other quality, as clay passes into slate by imperceptible degrees; but the difference in the action, as regards the sensible comfort of the inmates of a dwelling-house, of a tile roof and of a tile floor, is very deserving of attention. If the influence which is either transmitted or arrested by the clay be of a nature akin to terrestrial magnetism or electricity, we may form some idea why a tile roof should be a comfort and a tile floor a discomfort.

Recent improvements of various kinds, and the knowledge which the International Exhibitions have served to spread, have turned the attention of the architect to the use of terra-cotta in building, of which we have not unfrequently spoken. But it is matter of very serious regret that nothing seems to arrest the increasing deterioration of ordinary building bricks. Their extreme roughness is such as to demand a quantity of cement altogether disproportionate to that used by the old bricklayers. We use the word in its general, and not in its special, sense. With the increase in the quantity of cement employed comes an increased temptation to mix it with inferior materials. Thus the main good quality of our brick buildings, their durability and defiance of weather, is becoming seriously impaired by the struggles of the brickmaker to use every sort of earth obtainable.

The main architectural novelty of the last twenty years has been, as most of our readers are aware, the increased use of iron as a building material. This has reacted on structure, and on pictorial design. In some instances the action has been most desirable. Thus we have attained a power of covering large apertures, whether with heavy rolling weights, as in our estuary and intra-mural railway-bridges, or in the way of mere shelter, as in railway stations and slip-roofs. We find a legitimate and admirable use of iron in such structures as the Albert Hall. We regret the power of bigness which has been placed at the command of the builder in such places as the Charing-cross and Cannon-street roofs. But there are so many and so great objections to the use of iron as a building material that it is well to review them.

To a certain extent, we may speak of these objections as, in the main economical. But economy is not all,—or, at least, the word must be taken to include the economy of life. It is only the other day that the traffic on the St. John's Wood branch of the Metropolitan Railway was arrested by some threatening symptoms in the bridge over the Regent's Canal. The company are to be congratulated on their vigilance, as one of the main evils of iron as a structural material is the entire absence of warning before fracture.

Then we have to bear in mind the constant invitation which any unprotected surface of iron continually offers to the subtle and destructive power of rust. Careful and constantly-renewed painting is of vital importance to the durability of iron. In large exposed spaces where the metal is thin and outspread this source of danger becomes disproportionately large. Thus, on the one hand, all those fittings and ties which are exposed to atmospheric influence (as to which the fact of being under cover is not of so much importance as might be imagined), but removed from ready inspection and access, and, on the other hand, those plates and sheets which cover large areas with comparatively small weights of metal, are sources of danger which the architect who builds for posterity will carefully avoid.

Added to its structural fickleness, especially when exposed to fire, and to its liability to stealthy erosion by rust, is another peculiarity of iron that will render the provident designer very chary of its use, except in those circumstances for which no substitute can be readily procured,—that is, the great fluctuations of price to which it is subject. These amount, as we have recently seen, to 300 per cent. Fluctuations in the price of labour, and thus of materials, are among the difficulties with which the architect has always to reckon. But nothing that has yet occurred among carpenters, masons, or bricklayers, either as regards the materials on which they work or the wages they may demand, is at all comparable to the violent fluctuations that take place in the price of iron.

A further caution to be observed in the architectural employment of iron depends on the excessive variability of its tensile and compressive strength. In bar iron there is a difference in tenacity, between the best Yorkshire bar and the ordinary merchants' bar, of 40 per cent. In elasticity, the difference is yet larger, amounting to 75 per cent. over the minimum, or average of from 14,000 to 8,000. In toughness, the work

done in breaking a 1 in. bar, 1 ft. long, differs from 730 to 5,700, the best Yorkshire iron having eight times the tenacity of the common bar, and the disproportion in plates being even greater. Even in specific gravity differences occur to the amount of 22 per cent. It is therefore evident that, when we speak of iron, we speak of a group of metallurgic products differing, as much as if they were known as distinct metals, in all the qualities which are of value to the architect; although they may very closely agree in one of the properties with which he has to contend, viz., liability to corrosion. Absolute test, in the case of any important ironwork, is a *sine quâ non* for the engineer. And the tests, to be worth anything, must be applied either to the whole supply, or to samples selected at will by the purchaser, without any communication with the provider. We could give striking examples of the manner in which iron is got up for special testing; and we believe that Mr. Kirkaldy, the inventor and proprietor of the best mechanism employed for the purpose of testing iron of any kind, could tell much more.

But even this is not all. It is now seventy-one years since the first successful application of cast-iron beams to the purposes of building, which took place, according to Mr. William Fairbairn, in 1801, in a cotton-mill at Manchester, after designs by Messrs. Boulton & Watt. Tredgold's work was published in 1822. Mr. Hodgkinson commenced his well-known inquiry into the strength of iron beams in 1827; and we have a Parliamentary Blue Book, the report of the commissioners appointed to inquire into the application of iron to railway structures, which dates in 1819. Yet on a subject which certainly ought, by this time, to have been reduced to scientific certitude, we have recently seen published a new treatise, in which the author establishes at all events a *primâ facie* case, to the effect that in all the wrought-iron beams that are constructed according to the *formulæ* now generally accepted, fully one-sixth part of the iron employed is wasted; while in cast-iron beams, repeated applications of the recognised working loads will subject the upper flange to a repetition of the proof stress, and are thus likely ultimately to cause failures. Thus, in a word, iron, as an architectural material, is not perfectly understood in its scientific theory; is subject to extreme variation in quality; to a variation in price of from one to three; and to the never-failing action (unless carefully counteracted) of the corrosive elements of the atmosphere.

Our recent experience with regard to stone has been enlarged in both an upward and a downward direction. How far stone, which has not been carefully selected from a known bed, is from being a durable material, or even from equalling the durability of wood, may be estimated by any architect who will take the trouble to examine the condition of the New Palace of the Legislature at Westminster, and any of his own buildings. The most striking instance within the range of our own personal experience is the case of St. David's Cathedral. Beds of red and purple sandstone, of colours most charming to the eye, are to be obtained in Pembrokeshire, which are almost indistinguishable on inspection, when first quarried; but which differ in their durability as much as Portland and chalk differ. Nash, the architect, restored St. David's in his time. He used some of the perishable stone, and much of the restored work is more decayed than that which it replaced. Some of this stone was used in the station buildings of the South Wales Railway, to the great satisfaction of Mr. Brunel's staff in the first instance. Symptoms of decay, however, soon made their appearance; but were arrested by the application of a silicate.

On the other hand, we have recently had the opportunity of comparing the condition of massive stonework that may be definitively assigned to known dates, differing from each other by periods of 540 and 570 years respectively, the most recent of which is 1,900 years old. We refer to the results of the exploration of Jerusalem by Capt. Warren, which are such as to enable us to identify with certitude, in certain points, the work of Herod, of Nehemiah, and of Solomon. Of the former, which was constructed without cement, but with the joints strengthened by mortises and tenons in the solid stone, there are stones now *in situ*, with the quarry marks, in red paint unobliterated, in perfect preservation. There are others of the same or later date, much decayed. The result of the observation is, that in 2,800 years the difference in durability between stone from different beds in the same quarry has been such, that we have reached the limit of that of the inferior quality. It may be said that this is a long life for masonry. We may contrast it with the cathedral work to which we have before referred. The result is, that or a stone building on the durability of which the architect desires to rest his fame, the selection of bed is a matter of as much importance as the selection of quarry. No beauty of appearance, or behaviour under the pick or the chisel, is a proof of durability. Actual experience of the power of any particular stratum of stone to resist atmospheric influence, can alone assure the builder that he is working securely for the future.

It ought to be hardly necessary, in the present day, to call the attention of the architect to the extreme danger of an intermixture of iron and stone, or, indeed, of iron and brick. When brought into direct contact with mortar, nothing will prevent the slow erosion of iron. It is not necessary for the atmosphere to have access. The materials requisite to allow of destructive chemical change are to be found in the iron and in the mortar. And it is not merely the gradual disntegration of the former that is to be feared. That would be a source of positive danger, so far as the tenacity of the iron had been depended on by the builder. But the evil is active and unsleeping. Beds of rust, of three or four times the thickness of an ordinary iron plate, *grow* within the structure, with an energy as destructive as that which is exercised by the roots of plants. The marble sarcophagus of King Henry VII., is an instance of which we can speak from personal observation. Most of the metal work of the beautiful structure was either copper or brass. But there were iron plates introduced as washers between the horizontal slab and the walls, which behaved exactly as we have described. They coated themselves with beds of rust. of three times their thickness, and were, when removed, slowly shattering the tomb.

Hoop iron laid in as bond to brickwork is a not unmechanical method of increasing cohesion to a very considerable amount. But it requires care that it should not become an engine of destruction from its chemical action. Such is invariably the case when it is laid in mortar. In cement, however, the destructive action does not occur. The iron lies chemically dormant, and does its mechanical duty. But in all cases where the use of metal is absolutely necessary for the support of masonry,—as, for instance, where a delicate pinnacle, or the acute quoins of a skew arch, are pierced with a belt,—we most strenuously urge the use of copper.

We do not wish to introduce moral reflections into an architectural inquiry. But it is impossible to investigate the question of durability of building material without being struck with the immense difference in the treatment of their work by ancient and by modern builders. Men build now for a livelihood. We do not speak of this as discreditable,—far from it. Yet it *has* the invariable accompaniment of the temptation to build cheaply, and therefore not durably. The old builders wrought for durability. The Great Pyramid, or the Great Temple Enclosure, or the mysterious Stonehenge, might have been executed at the tenth part of their actual cost, and so as to have presented, when spick and span new, as brilliant an appearance as could ever have been their pride. But where would they have been now? Where will any of our public buildings be, we will not say 3,000, but 300 years hence?

THE ANTIQUE, AND MODERN STUDY.

So many differences there are between the way of bringing into existence an art work in these modern times, and that of doing the same thing in times gone by, that one hardly knows what special difference to select that shall most interest those students of art who care to go into such matters. We well know that it is too theoretical and abstract, and unpractical for many; but to the few who can see into it, it is a matter of no small interest, for before *practice*, or a change in practice, there must be *theory*, and thought, more or less. What very remarkable difference, therefore, is there between the old art action and the new, which shall take in, so to phrase it, the greatest possible sum of difference between the two systems? We think we shall be safe in saying that in no one respect is there a greater distinction between the old or past method of artistic procedure and the new, than in the fact, so seldom if ever noticed, that the old art, as the *Greek* sculpture, *came direct from nature*, while modern sculpture for the most part, and always in the Royal Academy Schools, comes from "*precedent*," *i.e.*, sculpture produced in past days by almost extinct races of men. It is almost impossible to imagine in these times what the position of a Greek sculptor was. With his block of marble before him, as yet unhewn, his mallet and chisel in hand, and with every mental and bodily capacity to do the work, what did he go by without *precedent*, or "ancient examples," to adopt a favourite phrase? Let any one who thinks this commonplace, fancy, if he can, what our Royal Academy would be were the "antique" away from it. What would be said, what done? No man can imagine. But yet this was the precise position of the old Greek, and we may fairly add the Roman, and most surely the still older Etruscan. Yet did the Greek with all this lack of our artistic helps, do his work right well, as the Greek fragments and remains in the British Museum alone will evidence to any one who will give but a little thought to it. "Imaginative power" of the highest order, say some, did the work: it all lay in the mind,—what need of precedent? Then there is the "anthropomorphic" theory, as adopted by Mr. Gladstone; and then again the notion that the "rhapsodising" of Homer, and his inspiration, wrought such wonders out of the dull and formless marble. All or any of these, for we need not go into the controversy just now, may or may not be true, or may or may not account for what the Greek did; but of one thing we may be quite certain, that the great sculptors of Greece could not but *see* the fine and noble forms about them, and seeing them, could not but admire and be impressed by them, and influenced by the magic of their constant presence. To *see* was to profit practically by the seeing. The impression once made could not be effaced, and the power of mind and hand could not but be helped, nay, almost created, by the perpetual presence of such well nigh perfect models: not still and lifeless, and void of expressional power, as our academy models are, but ever living and moving in the common and every-day Greek life. What need of "precedent," indeed, *could* there well be for those who have created precedent for us? What precedent could there be for the production of the perfect Theseus, or, according to Canova, the yet more perfect Ilissus!

If all this be not a little curious, and significant of the difference between the old and the new,—between the antique mode of doing things and our modern and, as some will, perhaps, say, *improved* method of work,—there is yet a more singular evidence of the vast change that has taken place in principle between the old-world ways and the new and modern. It is, and we ask attention to it especially, that of the little use made in such a place as the Crystal Palace of a collection of antique examples. Let us explain. In the Royal Academy, as is so universally known, the "*antique*" is everything. It is the life, and soul, and body, of the place, as an art-school. The antique in it lives again,—a sort of galvanic life only, it is true, but still there it is all and everything, the only true foundation and guide to art-action. But at the Crystal Palace all this living antique is no longer the all-animating inspiration, but is found to be nothing more than a collection of interesting fossil bones,—mere antiquities,—neither more nor less,—interesting to the student of history and the instructed sight-seer, but no longer the guide to actual *action* of any kind. The Crystal Palace action, as all know, is made up, to a great extent, of what may be termed *amusement*,—artistic amusement, if you will. Quoit-throwing, running, dancing,—dancing, prohibited almost everywhere else,—gymnastics of very various, if not actually classic, kind: all these things are done instinctively, and because people naturally like them, and like to look at them; but who ever saw any one human being, whether art-student or not, attempt to imitate the antique in any way whatever? Whoever, for instance, ever thought of casting even so much as a glance at the "Discobolus," for the purpose of classically handling the *discus*, or throwing it well? Who has ever thought of looking to his own "muscular development" by the side of the "Fighting Gladiator," to find out, it may be, what progress, if any, has been made in the vast interval between the days of old Homer, or Phideas, or Miron, and our own in the facts of muscular development, of increased strength of arm-power, or of hand-grasp, or of flexibility of foot, or indeed of anything which could or may have

been added to the *power* of living humanity? No one, of course, has ever thought of this for a moment, and still less has any one ever dreamed of acting upon it. Yet why not? If to multiply "sculpture," to make new statues, to study how to draw the "figuré" or how to become a great sculptor, it is necessary to go to the *antique*, and to copy it, and almost religiously to imitate it why should not the modern gymnast, and lover of muscular action and the exercise of the bodily powers, go direct to the glorious antique, and learn of it, and, if not directly to imitate it, as they do at the Academy, in learning to draw it, to, at least, be guided by it, and to have it ever and always in view, and within call, so as to be able to refer to it, and test power by comparison? We say, why should not this be? For if the insensible marble be necessarily lifeless without perpetual reference to the old Greek antique, why should not the living athletæ be alike needful of it?

These things cannot but strike the thoughtful student of art with a little astonishment, for the impression made by the antique being so powerful, it seems a wonder that it has not a greater practical and common influence,—influence that is on every-day life; and we cannot but think that there is, and must be, a germ at least of a right good idea in it. The Greeks and Romans! What would all our schools and colleges be without them, and their memories, and writings, and wonderful ways? We yet live on them, and dream about them, and in "sculpture" certainly, if not in architecture, and in decoration, imitate them as closely as we can. A wonderful race of artist men! We are all led to these thoughts on old Classic times every now and then, for the modern cultivated man could not live without the "Classics" in some form or other. Even a Latin play, acted out by college students at Westminster, is a something, and in spite of all sorts of hindrances and odd mistakes, and an almost unpronounceable language, schoolboy Latin, it seems somehow or other to carry one right into the great times when the plays were written. Could not this idea of seeing into the old Classic ways be extended, if only a little? Mr. Thomas Carlyle in his last lesson to the modern student, and on a very special occasion, emphatically recommended the study of the Greek and Roman writings and ways; and it is quite certain that, whatever their failures and shortcomings, there was very much in them well worth the looking at, and careful study, if not *imitating*; and it seems strange that more has not been done to give it expression, and to place the semblance of it before the mental and bodily eye of the art-loving public.

We have noted the action of the Crystal Palace as one of some singularity if carefully looked at, and that of the Royal Academy as one equally so in another direction, and the thought has struck us more than once, could not these ideas be extended, and, may be, combined somewhere,—say,—for there would seem to be no small difficulty in spite of every effort to utilise it,—in the Alexandra Palace. That building is now a blank space, and no one seems to know well what to do with it, or in it. Could it not be made effective for real, and *bonâ fide* artistic purposes? There is ample room for it, we should think; for the general public, truth to say, see but little or nothing of art in action. Let us, by way of example, and to make our meaning as clear as may be,—a little difficult, for the thought is somewhat new,—cite *horse-racing*. That there should be a *racecourse* in such a place, and in connexion with such a building, may seem somewhat strange, but the *fact* is quite certain, there is a racecourse, and it has been on more than one occasion brought into practical use. Horse-racing in this country is pretty much the same everywhere. Horses, men, mode of riding, dress, and all the surroundings are the same, and no one can deny that it is "popular," and meets the wants of a large bulk of the British public. It fills the public eye, and everybody is satisfied; and the whole show is to the British man an artistic display, quite as much so as the famous Olympic Games were to the ancient Greek, or the great Gladiatorial shows to the Roman.

Of all this no one can or will doubt, though the facts are somewhat of the strangest, but not more so than the conclusions that may be drawn from them or the lessons that are to be learnt from them. No one who will with some patience go into the subject will dispute the fact of how much the Greek got out of his great Games artistically. They were, indeed, his "precedent." In them he found his models, and his life and action, and could make out of them the pictures,—the statue-pictures, if we may use the term,—which we see and go by, and try to copy, but only in despair, and call the "antique." Of the magnificent power displayed in those wonderful fragments no one needs to be told, or that they are truly representative of the antique classic life. But turn to the modern horse-race, and look at it as an artistic show and as the *precedent* out of which to create an artistic work, capable of being placed side by side of the Greek work, even supposing the art-power of the *executive* artists to be the same. What must be the art result? It is surely needless to say, or even to hint at it. It must fail, the conditions being so different. How much, therefore, must there be to learn, and what a really useful purpose might the now empty Alexandra Palace be put to if filled with instructive evidences of the highest artistic power, and a "school" in combination with it, for the purpose of making it all practically useful. Much might be added in detail to show how all this, that we have thus hastily glanced at, might be best worked out; but we must be content to simply indicate the way.

VARIETIES IN RAILWAY GAUGE.

The Government of New Zealand has wisely determined that the railways they are about to lay down in the colony are to be on the comparatively narrow-gauge of 3 ft. 6 in. The "battle of the gauges" has been a long and obstinate conflict, and has extended to very remote regions,—to India and Australia,—but there is no reason for any contest in New Zealand, where the question of working junctions with existing lines can scarcely be said to present itself for the embarrassment of the question, the lines now or about to be commenced being practically the beginning of a system of railways for the entire colony; with the notable exception of an existing line in the province of Canterbury, which includes a work of the same nature, and nearly equal extent, as the once celebrated Box tunnel in this country.

The history of the gauge question is interesting, and presents some curious features. The prevailing impression probably, amongst those who are not called upon to interest themselves specially in railway matters, is that there are two gauges only,—the prevailing 4 ft. 8½ in. gauge, adopted by George Stephenson, and the 7 ft. gauge laid down by Brunel on the Great Western system. The fractional ½ in. in the ordinary narrow-gauge may appear whimsical, but it is accounted for very easily. Railways, as they are, are a growth rather than a creation. They were preceded first by wooden tramways, then by plateways, next by flanged rails, and finally by flanged wheels running on iron rails. The ordinary gauge of carts and wagons that were used upon the primitive tram, plate, and flanged railways, was 4 ft. 8 in. This width was found to answer very well practically, and when the flanges were changed from the rails to the wheels, it was retained, no reason presenting itself probably for an alteration, which if made would have caused considerable disturbance and cost in the adaptation of rolling stock: 4 ft. 8 in. was really the gauge: the odd ½ in. was added to afford play without side friction. The gauge served its purpose on the Stockton and Darlington line. Stephenson looked to a future when, as he said on an occasion to his son Robert and John Dixon, "Railways will come to supersede all other modes of conveyance in this country,—mail-coaches will go by railway, and railways will become the great highway for the king and all his subjects. The time is coming when it will be cheaper for a working man to travel upon a railway than to walk on foot. What I say will come to pass, as sure as you live. I only wish I may live to see the day, though that I can scarcely hope for, as I know how slow all human progress is, and with what difficulty I have been able to get the locomotive adopted, notwithstanding my more than ten years' successful experiment at Killingworth." The result, we need scarcely say, has even exceeded Stephenson's most sanguine anticipations. Having such views, it was natural that the same gauge should be adopted for the Liverpool and Manchester line as that upon which the Stockton and Darlington line had been laid. Very early in the history of railways, a curious accident led to an unintentional diversity of gauge. At the same time as George Stephenson was giving evidence in favour of the Stockton and Darlington line in one of the dingy committee-rooms of the old House of Commons, the Llynvi Valley line was being promoted in another. The principal promoter of the South Wales line, inspired probably by Stephenson, and sharing his belief in the ultimate reticulation of the country by railways, prepared for the future junction of the Llynvi line with the Stockton and Darlington by adopting the same gauge,—a junction, however, which was never to take place, from the inadvertent mistake of placing the flange on the *outer*, instead of the inner, side of the wheel, and making the gauge so much less, by the thickness of the two rails, than 4 ft. 8½ in. The old Llynvi road was so laid, and for many years served usefully as a mineral line. Portions of this old railway still remain, although not now used, and others have been incorporated with the amalgamated Llynvi and Ogmore system, by which the original Llynvi has been absorbed. The communication with the North has only recently been completed; and it is a curious fact that the first "foreign" wagon that came upon the Llynvi and Ogmore, a few months since, was from the Stockton and Darlington line, forty-five years after the Llynvi Valley Act was obtained, 6th Geo. IV.

The question of increasing the width of gauge arose with Isambard Kingdom Brunel, engineer-in-chief of the Great Western Railway, an imaginative, self-reliant, and daring genius, who was thoroughly averse to follow any man's lead in the gauge of a railway, the design of a bridge, the construction of an engine, or aught else coming within the *rôle* of the engineer. He aspired to make the best possible road, irrespective of cost; the Stephensons, father and son, were content to make good and safe roads that would *pay*. Brunel's adoption of the 7 ft. gauge for the Great Western, opened the question, and led to the long and keen contention not yet settled. Engineers sought for perfection in a *via media*, between the 7 ft. and the 4 ft. 8½ in. gauges; but no one at first proposed a gauge narrower than that last named. The arguments in favour of the broad gauge were, that greater steadiness would be secured, and higher speeds attained with safety than were possible with the narrow gauge. To give better space for the machinery of the locomotive, to secure greater steadiness and higher speed, it was thought that the 4 ft. 8½ in. gauge might be widened with advantage, and without material increase to the cost of the line or of the rolling-stock. For the Eastern Counties a gauge of 5 ft. was adopted. In Scotland some short lines were made with a gauge of 6 ft. Ireland could not, of course, be affected by the question of junctions with British lines; but the promoters of Irish railways might have been expected to be influenced by the consideration of junctions between lines in their own island. This they do not seem to have been, seeing that the Ulster company adopted a gauge of 6 ft. 2 in., and the Drogheda company a gauge of 5 ft. 2 in. The Irish Board of Works had much more contracted notions, feebler faith, and shorter sight, than George Stephenson, as to the ultimate extension of the railway system. When he was consulted as to the gauge of the Canterbury and Whitstable and the Leicester and Swannington railways, he said,—"make them both alike; they are a long way apart now, but they will be joined together some day." When complaint was made to the Irish Board of Works as to the discrepancy of gauge, their reply was that "the two ends were complete; there was little chance of the intervening space ever being filled up by a railway, and that, therefore, there was no harm done." General Pasley, to whom the matter was referred, fixed the gauge for Irish railways at 5 ft. 3 in., which was different from three other gauges then in operation.

The question of gauge of railways is now presented in a totally different light from that in which it appeared fifteen or twenty years since, and the contention is not now between the 7 ft. and the 4 ft. 8½ in. gauge, but to how much less than 4 ft. 8½ in. can it be reduced? On the Great Eastern line the gauge was long since reduced to 4 ft. 8½ in. On many portions of the Great Western itself the 7 ft. gauge is abandoned, and the 4 ft. 8½ in. gauge substituted. Numerous important improvements have been effected in the construction of the locomotive, and much has been done to demonstrate the capabilities of narrow-gauge railways. Mr. Robert Fairlie has conclusively demonstrated with his "Little Wonder" on the Festiniog line, that heavy loads can be conveyed, with perfect safety, at fair speed, on a line with stiff gradients, and some curves of two and three chains radius, that has a gauge of not more than 1 ft. 11½ in. We have

travelled upon this "toy line," as it has been called, and were certainly startled by the quickness of the curves, and the daring nature of its sinuosities, as it ascends and descends the mountains between Portmadoc and Festiniog; but we could not fail, in the face of its immunity from accidents, and of its wonderful performances, to conclude that if a 2 ft. gauge line can do so much, and do it so well, a 3 ft. 6 in. gauge should be capable of doing anything that can reasonably be expected from railways or the locomotive.

Some of those most directly interested in the development of the material resources of India are urging that future extensions should be on a gauge of 3 ft. 3⅜ in. instead of the 5 ft. 6 in., laid down by Lord Dalhousie's administration. The fractional ⅜ in., like the ½ in. in the English gauge, is probably an allowance for play. In Victoria there is an agitation for the reduction of the gauge for extensions from 5 ft. 3 in. to 3 ft. 6 in. In India the proposed narrow gauge for extensions is opposed by Colonel Kennedy, on the ground, chiefly, that the loosely-packed cotton brought from the interior cannot be carried upon narrow-gauge trucks. That is rather an argument for an improved mode of packing, than for the construction of hopelessly unremunerative broad-gauge railways. In the International Exhibition, just closed, a bale of Indian cotton, pressed by West's hydraulic press, was shown compressed to the density of timber, and hard enough to hold a nail driven through the hoop-iron lashing into the cotton as firmly as it could be held by a deal plank. Every separate cotton plantation might not have its own press, or full work for one, but packing stations would surely be practicable, and narrow-gauge branch railways that would give a reasonable prospect of a return upon the capital expended upon them, would be an immense improvement upon the bullock drays by which the cotton is now dragged tediously to the stations on the trunk lines. If a given weight of cotton as packed cannot be carried upon one wagon on the narrow gauge, it may be carried on two. The narrow, as compared with the broad gauge, effects a large saving in the road-bed, in cuttings, tunnels, and embankments, in rolling stock, in dead weight, in working expenses, and in other respects. In many localities at home, abroad, and in the colonies, where railways are greatly needed, comparatively inexpensive narrow-gauge lines furnish the only possible or satisfactory solution of the important problem of "railway or no railway."

In New Zealand, free from the embarrassing element of physical junctions, and where the principal commodities carried will be mineral and agricultural produce, including wool, the 3 ft. 6 in. gauge may be confidently expected to answer satisfactorily all requirements.

THE LATE MR. ALLOM, ARCHITECT.

On Monday, the 21st inst., Mr. Thomas Allom, architect and artist, died, at his residence, Barnes, Surrey, of disease of the heart, after several weeks of severe suffering, which he endured with an exemplary patience. Mr. Allom was born in London, March 13th, 1804. Showing early signs of artistic talent, he was articled to the late Francis Goodwin, architect, in whose office he spent nearly eight years, engaged upon many important public and private architectural works. Proposing to travel to improve his knowledge and taste, his artistic powers soon led to offers from Messrs. Fisher, Son, & Co., Messrs. Virtue & Co., and Messrs. Heath & Co., the well-known publishers, which were accepted, and resulted in beautiful illustrated works from Mr. Allom's pencil, being published in periodicals, extending over a course of twenty years. These were eagerly sought after, not only in this country but in many Continental cities.

The following are some of the works in question: — "Cumberland and Westmoreland;" "Devonshire and Cornwall;" "Yorkshire, Derbyshire, and the Midland Counties;" "Surrey;" "Scotland;" "Belgium;" "France;" "Constantinople;" "Asia Minor," including the "Seven Churches of Asia;" and "China."

Mr. Allom (who was at an early age a student of the Royal Academy) exhibited at the Royal Academy and other exhibitions for many years, where his charming pencil usually gained a place of honour. He was frequently called upon to assist his professional brethren, and there are few artists who forget the vigour and beauty of the drawings, made for the late Sir Charles Barry, of the new Houses of Parliament, and presented by him to the late Emperor Nicholas. We may also recall the designs made for the embankment of the Thames in 1846, which had great merits.

Mr. Allom was one of the founders of the Royal Institute of British Architects, and of late years devoted his attention to his original profession (that of an architect), but continued to produce from time to time many beautiful pictures in water and oil colours.

Among his chief works as an architect are the following:—During his partnership with Mr. Lockwood were executed—the Kirkdale Industrial Schools, for 1,200 inmates; the Liverpool Workhouse; the Wesleyan Chapel at Hull; the Holy Trinity Church, Hull, &c. Subsequently, Mr. Allom designed and carried out the following works: — Kensington and Colne Union Workhouses; Christ Church, Highbury (now being enlarged in accordance with the original designs); the London and Lancashire Insurance Office, at the corner of Leadenhall-street and Bishopsgate-street; the Cambridge Asylum for Soldiers' Widows; the Harwich Hotel; Hanwell Cemetery; the Islington Vestry-hall; the covering the Kensington Park Estate with mansions, for the late Mr. C. H. Blake, at a cost of nearly 200,000*l.*; besides numerous other buildings for private individuals. Several of the above works were obtained in public competition, in which Mr. Allom was successful; but he was, however, doomed to a great disappointment in the year 1856, when, in the competition for the Free Public Library at Liverpool, his designs having been awarded the first premium, were handed over to the town surveyor. In the Manchester Assize Courts, Mr. Allom's designs, although awarded the second prize only, were, as his friends state, so far as the plan is concerned, carried out.

It is painful to reflect on the number of artists, architects, and men of letters, friends and fellow-workers with the late Mr. Allom, who have passed away, most of them within the last ten years. David Roberts and Turner, two of England's greatest painters; Orrin Smith, Leech, Kenny Meadows, Samuel Lover, Mark Lemon, Charles Barry, Douglas Jerrold, Stirling Coyne, Professor Cockerell;—these and many others were his early companions and valued friends.

A widow, a married daughter, and two sons, —one following ably the profession of his father in London,—are left to mourn their loss.

There remains with the family a collection of many hundred original drawings and sketches of interesting places visited by Mr. Allom in his travels through Europe and the East. It is not many years since his "Seven Churches of Asia," works in oil, painted for Mr. George Virtue, were engraved in the *Art Journal*. These are now being exhibited, with Mr. Virtue's collection, at the Crystal Palace.

FROM FLORENCE.

The floods and inundations in the north of Italy have been dreadful. The canal made here in 1868, parallel to the Arno, has since saved Florence from its ravages, but great fears were entertained on Sunday night and Monday morning that the river would break all the barriers, and guards with torches were parading the quays the whole night to watch for any breach. The waters rose 5 ft.! Such torrents of rain, such sudden inundation, had not been known since 1844. The damage around Florence has been very great and very distressing. Houses were washed down. At Ligna, the water reached to the first floor of the houses. The railroad from Pistoia to Lesto was utterly disabled for two days.

Notwithstanding the great damage done at Pisa by the inundations of last year and in 1869, the prevention had only this year been taken; but after an expenditure of five millions of francs the engineering has proved to have been this week of no avail, or rather has been so badly executed that 50 mètres of the work have been carried away, and the Arno there is having its own way as of old. The inhabitants, more alarmed than before, have shut up their shops all the length of the quays. The people, terrified, are rushing from their homes, and strangers escaping as fast as can be, after settling down for the winter.

I can never forget the rain of the early morning of the 14th. The heavens, indeed, seemed to have opened, and no hope of their shutting seemed to present itself. The thunder and lightning were most awful. The frightful devastations and, unfortunately, loss of life—either by the floods or the falling of houses—are not yet known. Florence is looking forward to a very abundant influx of foreigners. It can no longer be recommended as an economical residence, so exorbitantly is everything increasing in price. Meat, on account of the immense exportation of cattle to France, is dearer than in England. Its attractions, however, are increasing; it promises more advantages than ever for education and improvement.

You have doubtless heard that the first architectural society in Italy was established this year. Its first meetings were in Milan; but Peruzzi, the Sindaco of Florence, has induced the society to make the ex-capital the seat of its operations, meetings, &c. It is a curious fact, that a country possessing so many architectural riches should have never, until this year, established a society for the study and consideration of the kindred art to painting and sculpture, of which it can boast that it possesses the most perfect specimens. Italy is progressing on all sides, thanks to the peace it is now enjoying. F. C.

THE "BULLETIN MONUMENTAL" AND M. DE CAUMONT.

With a recently published number, the last of the thirty-eighth volume, the *Bulletin Monumental* is announced as discontinued. When, thirty-eight years ago, M. de Caumont commenced this review, nothing of the kind was published in France. The *Revue Archéologique* of M. Didron commenced in 1844, ten years after the *Bulletin Monumental*. The *Revue de l'Art Chrétien*, at Amiens, and the *Revue Archéologique*, of Paris, are of a yet less early origin.

The "*Société Française d'Archéologie*," established also by M. de Caumont, had also preceded the *Comités Archéologiques*, of the Minister of Public Instruction. It may date its foundation so far back as 1831, and it was formally inaugurated in July, 1834. From that year it has never ceased to hold Congresses in all the chief cities and towns of France; and these meetings have widely advanced the science of archæology. As director, M. de Caumont, by his earnestness, his perseverance, and capacity for organisation, with intelligence and liberality superadded, has succeeded triumphantly in disseminating a vast amount of archæological knowledge, as the *Mémoires* of the society testify; but they cannot be spoken of independently of his other works, among which stands pre-eminently the *Cours d'Antiquités*, of which no less than 20,000 copies have been sold. The *Bulletin Monumental* is, however, the work which has been mainly instrumental in giving the most extended impulse to archæology as a science throughout France, Belgium, Germany, and England: it is, indeed, indispensable, to every true antiquary.

Of course a life so spent demands an enormous amount of physical as well as intellectual powers; and thus, through this long series of years, we find M. de Caumont ever active in the field as well as in the closet, directing and encouraging researches with zeal and good nature; while, at the same time, his private purse has ever revealed that he has not only had the means but also the heart to give freely. Indeed, everything connected with M. de Caumont is replete with liberality and unselfishness; and he stands a bright example to societies as well as to individuals, who would be archæologists in deed as well as in name.

C. Roach Smith.

THE EXTENSIVE NEW DRAPERY BUILDINGS IN HOLBORN.

The palatial block of new stone buildings, at the west end of the Viaduct, which have for some time been in course of erection for Messrs. Meeking & Co., are now fast advancing towards completion, so far as regard the central portion, and the east end, the boundary of which will form a part of Holborn Circus. When the eastern portion now in progress is completed, the west side, uniform with it, and extending to Fetter-lane, will be proceeded with, and on the entire block being finished from Fetter-lane to Holborn-circus, the Holborn elevation will be no less than 200 ft. in length, the height of the central portion, exclusive of the cornice and balustrade, being 60 ft., and that of the east and west por-

tions, 50 ft. The building throughout contains a very lofty ground-floor, with plate-glass windows, running the entire length of the Holborn, Fetter-lane, and Holborn-circus frontages, as well as the frontage southwards in continuation from the circus. The central portion of the building contains five stories above the ground-floor, the fifth story having eleven circular-headed clustered windows, with ornamental dormers between the balustrades. The east and west sides of the central portion of the elevation contain four stories, surmounted by a cornice and balustrades uniform with the central portion of the block. The first and third floors along the entire elevation have pediment-headed windows, and the magnitude and capacity of the building may be imagined, when it is stated that the number of windows in the Holborn elevation alone, exclusive of the ground-floor, is 112. Whether as regards their colossal extent or general appearance, these buildings form one of the most prominent architectural features in Holborn, and are perhaps unequalled by any other drapery establishment in the metropolis. Indeed, with the exception of Compton House, in Liverpool, which is a distinct square block, having four elevations, immediately surrounded by an equal number of thoroughfares, it is stated that the new buildings in Holborn surpass any similar place of business in the country.

ASTLEY'S AMPHITHEATRE.

The well-known establishment in the Westminster Bridge-road, which within a few years has undergone several alterations, has within the last week again been placed in the hands of the builder, with the view of the interior being entirely reconstructed. Messrs. Sanger, who last Christmas had their equestrian company there, have just purchased from Mrs. Batty the lease of "Astley's," thirty years of which are yet unexpired. The new lessees have determined to reconstruct the interior upon an entirely different principle; and with the view of carrying out this object workmen have been engaged in gutting the building during the last few days, and nothing whatever now remains beyond the main walls. We understand that the interior is to be so reconstructed as to serve both as an equestrian establishment and a theatre proper, with an entirely new stage and machinery, so as to adapt it to dramatic performances as well as those of the ring; and the auditorium is to be so arranged that the full extent of the ring, and the equestrian performances in it, will be seen from every part of the house with the same ease as the stage. The designs for the new interior have been furnished by Mr. J. T. Robinson, architect, who has recently reconstructed some other metropolitan theatres, and the contractor is Mr. Snowden. The works will give employment to some hundreds of carpenters, plasterers, painters, and decorators, and as Mr. Snowden is said to be under very heavy sureties to have the building ready for opening on "Boxing-day," relays of hands are to be employed on the works both day and night. The cost will be about 5,000*l*.

THE COST AND SEQUEL OF STRIKES.

The principal building trades who took a prominent part in the recent and former strikes and lock-outs have been furnishing their members and the public for some weeks back with their balance-sheets. Each has preceded the financial statements by an explanatory preface on the course of the respective struggles, the masons leading off first, in consequence of their earlier settlement with their employers. The carpenters and joiners, more ambitious than the others, have accompanied their balance-sheet with an introductory preface, containing a brief history, or rather outline, of former strikes and lock-outs during the last forty years. This last account published by the carpenters and joiners is noteworthy, for more than one reason. As an expression of operative opinion, it proves that workmen in the building line have learned much, but forgotten little. At last they have candidly acknowledged the evil of strikes and lock-outs, and desire that they may soon be superseded; yet they proclaim their determination to still resort to the former on an opportune occasion, for the full terms of their late memorial,—"nine hours and 9d. for fifty-one hours per week all the year round."

After an agitation, extending] over eight months, and an exhaustive financial struggle of upwards of four, counting the subsequent partial strikes against particular firms, the carpenters and joiners wind up their warfare at a cost of 7,251*l*. 13s. 11d. There is every reason for believing that the cost even exceeded the above by a pretty large sum, in disbursements for "dispute pay" to members of the General Union and the Amalgamated Societies of Carpenters and Joiners.

It will be instructive to those outside the trade, as well as within, to scan the following figures, showing the sources of income in support of the recent strike. Under the list of "subscriptions" from workmen in firms, there were realised 342*l*. 5s. 6¼d.; local Joiners' Societies, 280*l*. 13s.; the London branches of the Amalgamated Society of Carpenters and Joiners contributed 914*l*. 6s. 9d., and the Amalgamated country branches, 108*l*. 7s. 2d. The eight lodges of the General Union of Carpenters and Joiners in London gave 88*l*. 2s. 8d., and the various General Union provincial branches, 110*l*. 5s. 5½d. The Associated Carpenters and Joiners of Scotland sent 18*l*. 9s. 6d. The Ship Joiners altogether gave 120*l*. 12s. 11d. The Cabinet-makers, 170*l*. 2s. 8d.; Plane and Tool makers, 15*l*. 19s. 6d.; Pianoforte makers, 8*l*. 1s. 6d.; Tailors, 81*l*. 1s.; Bookbinders, Printers, Compositors, &c., 47*l*. 5s. 8d.; Goldsmiths and Jewellers, 9*l*. 0s. 7d.; Bricklayers, 6*l*. 4s. 7d.; Engineers and Metalworkers, 37*l*. 2s. 11d.; Painters, 7*l*. 8s. 3d.; Plasterers, 1*l*. 18s.; Masons, 26*l*. 7s. 4d.; Patternmakers' Society, 8*l*. 2s.; Zinc Workers' Society, 5*l*.; Rope Makers' Society, 11s.; Basketmakers' Society, 5*l*.; Gilders' Society, 3*l*.; Polishers (Carter's), 11s.

From public and coffee houses there was an income derived of 93*l*. 14s. This account is explained perhaps from the fact, that there are either societies or meetings held in all of these places, or they are otherwise "houses of call" for the members of the trade. Country friends, from various parts of the kingdom, contributed 669*l*. 11s. 8d.; and "Friends of the Movement," 540*l*. 18s. 7d.; levies at several local districts, 452*l*. 19s. 10½d.

Between the 3rd of February and the 19th of October the total of the above sums, with the exception of a balance of 1*l*. 9s. 2¼d. was expended in "strike pay" dividends to men locked out, and in the collection and administration of the funds, including stationery, printing, postage, committee, and officers' expenses, "pickets," &c. A few of the principal disbursements may be stated. The two firms—Messrs. Jackson & Shaw's and Brass's—cost the carpenters and joiners alone, for fourteen weeks' payment to 293 men withdrawn on the 1st of June, upwards of 1,800*l*. Add to this the dividends paid in ten districts to men locked out during eleven weeks, with the sum of 117*l*. 12s. 4d. in support of the partial strikes at Messrs. Corbett & McClymont's, Adamson's, Morant & Boyd's, and "half-wages" (25*l*. 15s. 4d.) paid to men for refusing to work overtime, and we have an outlay, according to the carpenters' and joiners' own statement, of 6,375*l*. 7s. 2d.

During the early part of the struggle there sat as many as from twelve to fifteen committee-men, who received 2s. per night for their labours; but in the months of June, July, and August the committee-men sat during the day as well as in the evening. Here is one item. From June 24th to July 24th, there were twelve committee-men, the majority of whom sat during the day, for which they received their 6s. 8d., and 2s. for their evening sitting.

Some sat upwards of twenty-six days during the month, with night and day pay, also travelling expenses, averaging from 5s. to 8s. per day. One month of this form of administration cost the carpenters' and joiners' funds, according to their own entries, 56*l*. 12s. 11d.

Clubbing the general committees, the district committees, the chairman, secretary, treasurer, two auditors, and adding the expenses allowed for deputations, district meetings, and some other matters appertaining, there were nearly 600*l*. expended. The printing, postage, telegrams, stationery, newspapers, and small sundries in connexion, approach to nearly 160*l*. The cost of the strike stands thus:—Total receipts, 7,253*l*. 3s. 1½d.; total expenditure, 7,251*l*. 13s. 11d.; balance, 1*l*. 13s. 2¼d. As the cost of printing the present balance-sheet is not included in the above expenditure, it will necessitate the sale of nearly 2,000 copies at 3d. per copy to relieve the trade from an actual liability. This would be a small item indeed if the carpenters and joiners could point to material advantages gained by their late struggle. The working hours are now 52½, and the wages they receive less. The shortening of the hours of labour is, doubtless, or ought to be, an advantage, but one of the objects sought is still unattained. Surplus labour will still exist in the market, and were even the nine hours, yea even the eight hours obtained, the absorption of the surplus labour in the London building trade would scarcely be appreciable. The increase of wages and the diminution of the hours of labour cannot, under the present condition of society and trade, take place at the same time save to a very small extent. It is perfectly visionary to suppose that, if strikes were determined upon every other or alternate year the principle that admits of wages being increased admits also of reduction in the hours of labour. The cost of production depends on the rate of remuneration; and in the cost of materials used, as well as in the workmanship, there is an amount of labour embraced. There is scarcely aught the building operative uses in house-construction or in the practice of his art but has passed through several hands previously to reaching his own. The stone from the quarry, the lime from the kiln, the brick from the earth, the timber from the forest, ore, colour, and pigment, all have to be torn from the soil, and pass through various manipulations ere they are finally utilised. Supposing for a moment these materials, in their various forms of production, were subjected to a like tax upon the labour that supplies them as that which utilises them in a building, what would be the result? All workmen are at liberty to strike at one time, and, whether striking or not, each is equally free to demand an increase of wages. Were this concurrence of events to take place, the building operatives, not being the first producers, would fare badly indeed. Too many houses may be built for the population, and of these there may be a great number unsuited for the incomes of their would-be tenants. As there cannot be a uniformity in the rent of all classes of houses it is scarcely possible that there can be a continued uniformity in the time and wages of all classes of workmen. No person will pay 50*l*. rental for a cottage worth only 25*l*., nor will he pay 150*l*. for a dwelling worth at the outside 90*l*. The position of a house of course often enhances the value of a building; but, on the other hand, property will be found depreciating in one locality, while it is rising in another. So with trade: a scarcity of labour in any particular place will have the effect of either absorbing the surplus hands elsewhere or of adding to the rate of pay. Wages have for years gradually increased in the building line, while they have decreased in other branches of trade; but this is no criterion that the increase will continue. The workmen in the building line in London always exceed the demand.

In the late struggle the non-society men were the weak point. The carpenters and joiners had to support several hundreds of them during the lock-out, and this constant drain upon their resources told in the end, and hastened their agreement. Non-society carpenters and joiners who are competent workmen, and thousands of them are, receive equal wages to society hands; but outside the society there are numerous hands who are only receiving still from 6d. to 7½d. per hour for their labour; and there is a large class of young men called "improvers," who receive less. The absorption of all the competent non-society hands into the Union would undoubtedly strengthen the societies, and render strikes more prevalent; but it would eventually fail in the object sought,—the constant increase of wages. There is no way of estimating the number of incompetent workmen. They are to be found in numbers, within the union as well as without it. The fact of their joining the society does not insure them continuous employment, though it has the effect of having them looked on with more favour by their fellow workmen.

The carpenters and joiners say, in winding up their late struggle: "The late agreement concluded between the carpenters and joiners and the master builders can only be accepted as a temporary arrangement, instead of a permanent settlement, or a compact binding for any length of time;" and they give their employers to understand that the struggle will be renewed for the full terms of their demand. The injury that will be done by this threat, through the doubts and fears thus raised with reference to future building arrangements, will be enormous, and will be felt by themselves as well as others.

The wisest words they have given utterance to are the following, which, we trust, they may every day more and more realise the truth of:—"The carpenters and joiners believe that strikes and lock-outs are evils, and, after all, but clumsy weapons of offence and defence; and they trust that the day may soon arrive when they will no longer be necessary, and that Courts of Conciliation may supersede them. Technical knowledge and skill will at no distant period assert their legitimate sway, and with that knowledge will grow the power that will enable the workman to ennoble himself and elevate his trade to its proper position."

Had the "clumsy weapons of offence and defence" been flung aside, and conciliation and arbitration been resorted to last May; had the compromise we early proposed been accepted; the carpenters and joiners might have saved the members of their trade and others nearly 8,000*l.*, much privation and suffering, and a good deal of business for this city. Masons, bricklayers, plasterers, painters, smiths, and labourers, have probably, in one form or another, collected and expended nearly 3,000*l.* during the late strike and lock-out. The income of the great strike and lock-out of 1859–60, in which all the building trades were affected, was 23,065*l.* 6s. 6d., and the total expenditure 22,747*l.* 2s. 11d. There was a balance of 318*l.* 3s. 8d. The partial strikes and lock-outs in 1861–2, in opposition to the "hour system" and in support of the masons, cost the carpenters and joiners nearly 1,000*l.* About the same period the "hour strike" cost the masons' body, according to their recent balance-sheet, upwards of 6,000*l.* The masters, in their turn, have lost thousands.

The financial loss is small, after all, when compared with the magnitude of the aggregate evil that strikes have always produced, and will always produce, when resorted to by workmen under a mistaken notion of their utility. It is not because strikes are lawful, and in some cases even unavoidable, that they are the less pernicious; and the resort to them cannot be justified except under the most exceptional circumstances and necessity—when all other obvious and honourable modes of adjustment have been exhausted.

SCHOOL BOARDS.

London.—Mr. C. Reed brought up reports of the Works Committee. The committee had received the following tenders from builders for the school for 1,040 children to be erected on the site in St. Paul's-road, Bow Common:—

Longmire & Burge	£9,989
Nixon & Son	9,977
W. Brass	9,940
W. Webster	9,925
W. Higgs	9,876
G. S. Pritchard	9,777
Perry & Co.	9,458
Cooke & Green	9,402
B. E. Nightingale	8,999

On receiving these tenders, the committee felt it necessary to reduce the cost of the school, and the architect was instructed to revise his plans accordingly. The reduction thus effected amounted to 1,029*l.*16s. 9d., and the committee now recommended that Mr. Nightingale's reduced tender, amounting to 7,969*l.* 3s. 9d., be accepted. The committee thought it desirable, for the sake of economy, to obtain a general tender for the supply of wire-guards for windows; they accordingly recommended that the tender of Messrs. J. J. Thomas & Co., of Edgware-road, for strong wire-guards, in all cases where necessary, at the sum of 7d. per square foot (exclusive of fixing), be accepted, and that in each case the architect be instructed to include provision for the same in his specification, the amount being deducted at prime cost, and paid direct by the Board. For the same reason, the committee recommended that the tender of Mr. W. Wright, of Westminster, for the general supply of tar paving, at 2s. 3d. per yard superficial (exclusive of preparing ground), be accepted, and that in each case the architect be instructed to include provision for the same in his specification, the amount being deducted at prime cost, and paid direct by the Board. The committee's reports were received by the Board.

Norwich.—The Board have resolved,—"That the tender of Messrs. Downing & Wegg, for the erection of the Heigham-street School, at the sum of 4,163*l.* 17s., subject to a deduction of 293*l.* 10s., according to the amended specifications, be accepted." Canon Howell was the only member of the Board who voted against the motion. It was also resolved,—"That the clerk be instructed to apply in the name of the Board to the Public Works Loan Commissioners for a loan of 4,842*l.* 4s. 4d., as sanctioned by the Education Department, for the Heigham-street Schools, and as to the terms upon which they will grant such loan." It was also agreed,—"That the question of the appointment of a clerk of the works for the Heigham-street School be left to the Building Committee, with power to appoint such clerk." In course of a discussion as to the estimates, which preceded these resolutions, and in which Canon Howell called upon Mr. Browne, the Board's architect, for explanations, the chairman quoted instances from the *Builder*, showing that in large places, such as Bradford and Southampton, discrepancies between architects' first estimates and the tenders received, had been common in consequence of the state of the labour market and the increased cost of materials. In justice to their architect, Mr. Browne, he desired that this statement should go forth. In answer to Mr. Hinds Howell, the architect said that he supplied all the builders who contracted with the quantities. It was usual to supply the builders with quantities in such cases. He showed this from the *Builder*, and also said that he was authorised by the committee to supply them. Mr. Hinds Howell said it was a bad plan for the payer to give the quantities. Mr. Browne contended that it was the only way to secure a correct estimate, and stated that the Institute of British Architects approved of its being done in the provinces, though not in London. In all the schools Mr. Hinds Howell had cited, he had no doubt the architects supplied the quantities. Mr. Pinder said that no fault could be found with Mr. Browne for giving out the quantities, as it was done with the sanction of the committee.

PNEUMATIC WELLS ON DONNET'S SYSTEM.

The *Technologiste* for August gives the annexed details of a method adopted by a French engineer, M. Donnet, of Lyons, for increasing the yield of water in ordinary pump-wells.

When a pump, no matter what may be its principle, is employed in raising water from a well, the quantity of water so raised must be proportioned to the draught of the well; in other words, the volume of water thrown out by the pump in a given time should be less, or at any rate not greater, than the volume of water which finds its way into the well in the same time. Now, the draught of the well is determined by the depression, *i.e.*, by the difference in level, at the end of a stroke, or at some other given moment, between the water within the well and the source whence the water is supplied.

To increase the draught of the well, and, consequently, the volume of water yielded by it within a given time, we must increase the depression of the well, by deepening it, more or less. Where this cannot conveniently be done, recourse may be had to Donnet's system, of which we have now to speak.

Donnet's wells differ from those in ordinary use in that the water within them is shut off from all contact with the outer air: the steining is made air-tight, and the mouth of the well is hermetically closed. This may be effected in three ways:—

1. By steining with headers set in cement, with a backing of puddle, the whole inside of the shaft being faced with cement; and the mouth of the well being closed with a metal plate luted down on the steining, so as to be air-tight.

2. By forming the shaft with the aid of a bell-shaped metal case, sunk in the ground, so that the mouth of the bell may be lower than the minimum level of the water in the well. The space between the sides of the excavation and the bell should be filled in with concrete. The suction-pipe of the pump passes through the upper portion of the bell, with an air-tight packing. A small pipe, furnished with suitable valves, connects the space above the surface of the water in the well with the suction-pipe, so as to prevent the air given off from the water accumulating within the bell.

3. When the piston of the pump is cased, the well may be rendered air-tight without removing the machinery. It will be sufficient to chisel holes in the steining, a little above the maximum level of the water in the well, to receive the ends of wooden or metal rods forming a grating, upon which is laid a flooring of planks: the whole is then cemented over, so as to be air-tight. This method is cheapest, and may readily be adopted in country places.

As already stated, the inventor's object has been to increase the supply of water in ordinary pump-wells without deepening them, and thus incurring increased outlay in the process of construction and on the pumping-machinery required; and this object is said to have been fully attained by the removal of the atmospheric pressure from the surface of the water within the wells. For example, at Lyons, where the wells are fed by water filtering through a succession of sandy and gravelly beds from the Saône and Rhone, it has been found that to insure a constant supply of 2,000 litres of water per minute in uncovered wells of not less than 2·50 m. diameter, it is necessary to have a depression of 3 m. or 3·50 m., *i. e.* the level of the water in the wells must be kept constantly 10 ft. to 12 ft. below the mean level of the rivers, to give the requisite head of water. Now, if we remove the pressure of the atmosphere from the surface of the water within the well, it is evident that the draught of the latter will be increased by the atmospheric pressure without. As a practical illustration of the increased power thus obtained, it is stated that a well at M. Millaud's establishment at St. Etienne, supplied by three springs of water rising in rock, while in an uncovered state yielded, on an average, 65 litres of water per minute. Three years ago it was hermetically closed, on M. Donnet's principle, and has since given an unintermittent supply of 400 litres per minute from the same sources.

HYDE PARK AND KNIGHTSBRIDGE BARRACKS.

Improved of late years from the aspect which it wore in memory of this generation, our park, an enclosure of 360 acres, in the richest centre of aristocratic London, has become an indispensable resource to the whole population. Nearly encircled by an open iron railing, planted around by the Woods and Forests officers, adorned with flower borders and marginal shade walks, encircled with drives and rides, it becomes every year more valuable to the pent-in denizens of the metropolis. On one side only it is margined and degraded by the old Cavalry Barracks, which are as comfortless to the troops as they are unsuited to the age we live in; and this antiquated pile, extending one quarter of a mile along its border, not only despoils the unity and beauty of the *enceinte*, but degrades and depreciates the most valuable quarter of our choicest suburb from Albert Gate to Rutland Gate, a distance of about half a mile.

Public opinion, expressed through the press, and frequent remonstrances by the *Builder*, had induced hopes that this hideous blane on London's fairest park would soon be removed. It had been surveyed, and found inadequate to afford proper accommodation to her Majesty's Guards, save only the officers' quarters and mess-room, which opens out to the park: suggestions were made, and hopes induced that suitable Cavalry Barracks should be erected at Chelsea; but on passing the sentinels to-day, we observed painters at work, giving a white coat to the window-sashes, back and front.

This seems not to portend an early evacuation, but rather fixity of tenure. Is there no authority to weigh expediency in such a case? Have the Woods and Forests, or the Horse Guards, or the Board of Works, any authority or discretion in such a matter, where great public interests are at stake?

The barracks were, in fact, first erected on public park—the people's property; they occupy a length of 450 yards; they advance upon the fair mile drive 30 feet, and they curvet outwards 40 ft. upon the most important of our metropolitan boulevards, the Kensington-road, which in this open and elevated position ought to be the choicest site for aristocratic mansions, but which, owing to the profusion of night houses of entertainment and grog-shops, has long been degraded and depreciated.

Surely it is worth a little sacrifice to accomplish a great public benefit,—to give integrity to London's grandest feature—Hyde Park; more especially when by such a change the condition of the soldier and of the citizen would be equally improved.

If barracks are needed *in this quarter*, there is a plot of waste ground between the entrance to the palace and Kensington Garden-road, amply sufficient, too, to accommodate the whole

regiment of Horse Guards; and it needs but a small comparative outlay for the completion, in one year, of a permanent structure, which would be a solace to the regiment, and a satisfaction to all residents or wayfarers.

There is also another public benefit that might at the same time be assured,—the removal of the misshapen and misplaced guard-house, and *other mean adjuncts* from the centre, which should be the most sequestered portion of Hyde Park, as also the withdrawal of the powder-magazine, which ought to be removed to a safe distance from the most important ranges of aristocratic mansions.

Lastly, some allusion may be made to a fenced enclosure of about 10 acres, in the central woodland dell, where a crowded village is yearly on the increase,—a goodly-sized country manse, with meadow, gardens, stables, and numerous offices, representing a ranger's house, where no ranger has ever resided; at least, during the current century. Four other buildings have been erected on the outer bounds, all tenanted.

In the New Forest, or at Epping (even reduced in extent as it now is), there may be some duties for a woodreeve, if not a ranger; but for Hyde Park, with 300 acres of parterre, there can be no possible occasion, unless to qualify him for a stipend.

As to the receiving-house, at one end, and the new police-station at the other,—these establishments are indispensable; but to keep up other refuges for destitute pensioners seems to be a wasteful intrusion upon the most valuable of our public liberties. This dell is the most picturesque portion of the whole expanse, which, in the present swollen state of our city, ought to be dedicated to the health and freedom of *range* for the still-growing population.

QUONDAM.

THE SOUTHAMPTON DOCK COMPANY'S NEW OFFICES.

LARGE and extensive new office buildings have just been completed for the Southampton Dock Company. In the erection of these buildings the company have looked beyond their present requirements, and taken into consideration what the necessities of the port may eventually demand. Acting upon this view, the building just finished not only provides accommodation for the company's existing purposes, but it has been designed to meet the future, and an anticipated increase in the business of the port. On the ground-floor there is a large public office for the transaction of the general business, with offices for the export and import warehouse keepers and other officers of the company. Also book and strong rooms. On the upper floor are the Board and directors' rooms, and the offices of the superintendent and accountant. The building, which is of stone, was designed by Mr. A. Gibbs, the dock company's engineer, and has been erected under the superintendence of Mr. John Howell, as clerk of works, over the company's own workmen.

THE NEW CHAPEL AT RUGBY SCHOOL.

THE chapel of Rugby School, which has been consecrated by the Bishop of Worcester, completes the list of new buildings which have been erected at Rugby during the last thirteen years. The chapel has been nearly rebuilt. The entire length of the building has been extended from 92 ft. to 133 ft., and double aisles have been thrown out on each side. The tower is 105 ft. high and 22 ft. 6 in. square, finished by an octagonal lantern, with a timber spire. An organ-chamber upon the north side of the tower has been built from subscriptions raised as a testimonial to Dr. Temple amongst his old pupils. On entering by the west door, we still see facing us the well-remembered east window by Albert Dürer, of the Wise Men's Offerings, which Mr. Butterfield has specially adapted his new work to receive. The four remaining windows, two on each side of this in the apse, are filled with stained glass, presented by his friends in memory of Dr. Cotton, Bishop of Calcutta, and formerly assistant-master in the school. The various stained-glass windows, with the mural and other monuments, have been preserved and incorporated in the new building. The decoration of the east end in panels with mosaic on a gold ground has been by private subscription. Seven panels have already been filled with six figures and a centre cross. The gymnasium, 100 ft. by 45 ft., with dressing-rooms, &c., raised upon a basement, hereafter to be used as workshops, although not absolutely completed, has just been opened to the school. The old bath and the building known to most old Rugbeians as "Sam's Farm" have been swept away. It is on the site of the latter that the gymnasium stands. It is, perhaps, the most complete building of the kind which has yet been erected in England. This with the pavilion, the racquet-court, and two Eton fives-courts, stands on the edge of the new Big-side, which, formerly known as the head-master's field, was added to the school-close by the then head master, Dr. Goulburn. The levelling of this field, a great and costly work, has been carried out by the Old Rugbeians.

SLOANE-SQUARE AND THE DISTRICT RAILWAY COMPANY.

ABOUT a fortnight ago the Chelsea Vestry resolved to take proceedings against the Metropolitan District Railway Company for the non-fulfilment of their contract in reference to restoring the houses in Sloane-square. It now appears, however, that in consequence of a purchase by the Earl of Cadogan the railway company are powerless in the matter. At the last meeting of the vestry a letter was read stating that the Earl of Cadogan had purchased the surplus land from the railway company, and that the company, though legally liable, were unable to fulfil the contract they had entered into with the vestry. But it was stated that his lordship was most anxious to do away, as soon as possible, with the unsightly appearance of the severed and broken-up buildings in Sloane-square, and hoped soon to be able to restore the uniformity of the street.

THE PROPOSED FIRE-ENGINE STATION IN PIMLICO.

AT the last meeting of the St. George's (Hanover-square) Vestry, the question of erecting a new fire-engine station in Pimlico again came on for discussion, when Mr. Walker moved a resolution to the effect that the Metropolitan Board of Works be asked to place a fire-engine station in Ebury-street, Pimlico, ground having been offered as a site by the Marquis of Westminster, and the immediate neighbourhood not being protected from fire. He stated that there was a distance of two miles between the fire-engine stations in the district, and that the site in Ebury-street was as good as could be procured. After some discussion on the subject, in the course of which it was denied that the inhabitants of Ebury-street were unfavourable to having a fire-engine station there, the motion was carried unanimously.

THE NORTH CAMBRIDGESHIRE HOSPITAL.

MISS M. E. TRAFFORD SOUTHWELL has given the poor of Wisbech and its neighbourhood a cottage hospital, and has just now laid the chief stone. On the suggestion being first made, plans for the building were obtained from Messrs. Adams & Son, and after some alterations suggested by Miss Southwell had been made in them, she approved of them, and the work was placed in the hands of her own builders, Messrs. J. & M. Challans, of Grantham. The contract sum is 3,264*l.*, and the entire cost will be borne by Miss Southwell, who, we understand, intends to furnish the hospital with every surgical appliance. A piece of land has also been given by Miss Southwell, which will be made into a carriage-drive, from Ruby-street to the hospital. But, besides the gift of the site, and bearing all the cost of erecting the building, Miss Southwell has generously endowed it with 3,000*l.*, to provide for its future maintenance. Further sums have been given by others.

The building will be Gothic in style, and there will be a tower on the north side, 50 ft. in height. It will be built of white brick, with red banding, and relieved by stone ornamentation. The height of the main building will be 36 ft. The following are the interior arrangements. There will be sixteen beds provided, six of which will be fitted up in each of the large wards, which are 37 ft. by 18 ft., and 13 ft. in height, 1,500 cubic feet of air being allowed to each patient, or double the average allowance in hospitals. There will also be two occasional wards, 15 ft. 2 in. square, for isolated cases, and two special wards, in which persons who are able to pay for their maintenance will be nursed. A commodious convalescent-room, 20 ft. square, was one of the rooms added to the plans by Miss Southwell's desire. On the ground-floor are the nurses', operating, and committee rooms, store and bath rooms, dispensary, kitchen (20 ft. square), pantry, and the customary domestic offices. On the basement are large cellars, which will be fitted up as larders, wine-cellars, and store-rooms. The chamber floor, which will be approached by a stone staircase, will contain, besides the wards, store-rooms and other conveniences. The ventilation of the lower ward will be by hollow air-chambers, built in the walls, which will pass round the back of the fireplace, and admit the warm, fresh air, the vitiated air passing off by regulating ventilators in the ceiling, communicating with the external air. The same arrangement applies to the upper ward, the air passing off through ventilators in the roof. The building will be warmed by open fireplaces. The drainage will, at present, be carried into a cesspool, until the new drainage works are carried out. To prevent any escape of gases from the pipes, charcoal ventilators will be placed at the junctions, and other precautions will be taken.

THE OLD BILLS OF EXETER CATHEDRAL.

AT the invitation of the Dean and Chapter, the mayor and the civic authorities of the city attended recently at the cathedral for the purpose of witnessing the progress that has been made in the work of restoration. The inspection was of an official character, and the procession from the Guildhall was headed by the sword and mace bearers in their quaint costumes, and the mayor also wore his robes of office.

Archdeacon Freeman pointed out what had already been done in the way of restoration, and at the same time brought before them such matters of interest as had been brought to light in the progress of the work. In reference to the Lady Chapel, he said they knew for certain the painting they would now see there, and which had been lately restored, had been there ever since 1301. They had found a bill for painting in that year forty-nine bosses, and otherwise colouring the vaulting. It did not say what building, but if they took the trouble to count the bosses, they would find that there were thirty-one in the Lady Chapel, and eighteen in the two side chapels. Therefore they knew that in the first year of the fourteenth century the Lady Chapel was completed, for it could not have been painted and coloured until the wall part was finished. The windows presented very early specimens of that period, and the bosses were carved in a great variety of foliage, all the leaves being gilded, and the branches painted in different colours. In the bill he had mentioned, they found exactly the colours to be seen there. The roofs of the two side chapels were painted in imitation of the sky, with the gold stars and silver moons, and the colours mentioned in the account. They would perceive that the restoration was really the bringing back to its original condition the colours found on the bosses of the roof, as mentioned in the account.

The Archdeacon then spoke of the part of the building in which the party was assembled,—the choir, which was now in all main particulars to be restored to its original condition. To the eight windows, four on each side, which form the presbytery, or eastern part of the choir, he paid particular attention. The Chapter, he said, possessed a bill taken from the accounts of 1301, showing that one Master Walter, the glazier of those days, received 4*l.* 10s. each for glazing the whole of those eight windows. The quantity of glass in each window was exactly named. The two side ones contained 1,271 ft. of glass, according to the bill. Each of them was 25 ft. high, by 10 ft. broad, and contained 275 square feet of glass. Each cost 6*l.* 10s. The smaller clearstory windows, 19 ft. by 10 ft., cost 4*l.* 10s. The whole of them were filled with stained glass.

The Episcopal Throne was placed where it stood in 1317. It used to be referred to the date of 1470, but Sir Gilbert Scott pronounced it on first sight to be of the earlier date, and since then the bill had been found for it, supporting his judgment. It was built by Bishop Stapleton in 1317. It was entirely of wood, was 57 ft. high, and contained a number of figures that were now lost. It was of carved oak, and was originally coloured. It was now being taken to

pieces; point by point the paint would be removed, so that the natural wood, with a slight admixture of colouring, would be brought to view. The oak for it cost 4*l.* 10s., and the carving 6*l.* 10s. Its restoration would be effected in the most careful manner.

As they had found the bill for the colouring of the bosses in the Lady Chapel, so also they had found a bill for the carving of thirty large bosses of the vaulting in Bishop Bytton's time, in 1305. They were carved for 5s. apiece, the work being done on the ground, and then the bosses were lifted to their positions. Every fourth boss was the key of an arch, so that if it were removed the whole arch would fall. There were very happy devices used in the carving of the figures, and the style adopted was a favourite mode of ornamentation. It would detain them too long to point out the various figures.

HINGHAM CHURCH, NORFOLK.

This church, which is dedicated to St. Andrew, and is one of the largest churches in the county of Norfolk, has recently been restored, and the nave and aisles reseated. The whole church, with the exception of a few minor portions, is of fourteenth-century work, and is said to have been rebuilt by Remigius de Hethersete, A.D. 1316 to 1359. It consists of a nave nearly 100 ft. long by 28 ft. wide; north and south aisles, each 14 ft. 6 in. wide; a chancel, about 60 ft. long, by 28 ft. wide; a western tower, 22 ft. square inside; a south porch, and a vestry (now in ruins). From the floor to the apex of the new nave roof is about 60 ft.

The nave piers and arches are of lofty and elegant proportions, with well-moulded caps and bases; the aisle windows are of two lights each, filled with very good Decorated tracery. The east window of the south aisle, which is of three lights, is a very elaborate specimen of the tracery of this period. In the chancel is a handsome and lofty monument to a Lord de Morley, erected in the fifteenth century.

The restoration, as far as it has gone at present, has consisted chiefly in removing the low pitched, decayed nave roof, and replacing it with a hammer-beam roof of oak, in the position and of the pitch indicated by the original dripstone on the east wall of the tower. The new roof is of simple character: moulded and curved ribs, springing from carved stone corbels, support the moulded and crenellated hammer-beams, from which spring the lofty main-moulded and curved ribs. The spandrels between the lower ribs and the wall are filled with foliage of varied design, and the spaces of hammer-beams with tracery.

The aisle roofs, which are also formed with hammer-beams, are not entirely new, but have been carefully restored. The roofs of the nave and aisles have been covered with Whitland Abbey green slates, which harmonise well with the old work.

The stonework and walls throughout, with the exception of the south porch, vestry, and tower, have been restored both outside and inside. New eaves cornices have been put to the nave and aisles, new copings to the gables, and a cross to the east gable of the chancel. The internal stonework of the nave and chancel bore evidence of having been much damaged by an extensive fire, which apparently extended from the west end of the nave to the east end of the chancel. Several of the nave-shafts were scaled from top to bottom. The defective parts had at some time been patched and covered up with plaster, and then the whole stonework and plaster alike had been coloured with a yellow wash. Upon the removal of the plaster much of the stone was found to be still in a very loose and unsound condition. These portions were cut out and replaced with solid stonework, making every part perfect and substantial. The remains of a piscina and three sedilia were discovered in the south wall of the chancel, which appear to have been inserted in the fifteenth century. They were so much injured and scaled by the action of the fire, and mutilated by projecting parts being chopped off when the walls were plastered, that it was not considered advisable to restore them. Parts have, however, been left exposed to view, which give a good idea of what they have been originally.

After some opposition, usual in such cases, it was decided to clear away the whole of the old boxed seating with which the church-floor was covered, and which was in a dirty and dilapidated condition, and to reseat the nave and aisles with open benches, of oak, resting upon deal flooring, with oak curbs, for the bench-ends, the rest of the floor being paved with red and black Staffordshire tiles. All the seats have sloping backs, and the solid oak bench-ends, as well as the front and back framing, are ornamented with carving, consisting of a great variety of foliage, with which heads and other animal and insect forms have been introduced. It has been all designed and arranged conventionally from nature by the architect, and executed, with a few exceptions, by Mr. James Forsyth, of London, from full-size drawings.

The church has been fitted up and lighted by gas; this has been effected in the nave and aisles by simple jets above the capitals of the piers: the chancel is lighted by a handsome brass corona. The gaswork has been done by Mr. Pank, of Norwich.

The whole of the works of the restoration, with the exception of the oak seating, have been carried out in a very satisfactory manner, by Mr. Robinson Cornish, builder, of North Walsham, for the woodwork, and by Mr. J. Lacey, builder, of Norwich, for the stonework.

The oak seating was made and fixed by Mr. William Hubbard, builder, of East Dereham. The architect was Mr. James K. Colling, of London. The cost of the restoration and reseating has been about 3,250*l.*, and it is estimated that about 500*l.* more are required to rebuild the vestry, now in ruins, and restore the south porch and tower.

CRYSTAL PALACE COMPANY'S PRACTICAL ENGINEERING CLASSES.

The Crystal Palace directors have established these classes for the purpose of affording to students of civil and mechanical engineering the advantage of thorough practical instruction in the rudiments of either profession and in the manipulation of materials. The classes are also available for gentlemen anxious to become engineering draughtsmen or to compete for the Whitworth scholarships, or to enter the Steam Mercantile Marine. We need scarcely say such a preparatory course will render pupils on entering an engineer's office at once useful to their employers, and enable them to take advantage of the opportunities offered to them during the time they are articled. One term will be spent in the drawing-office, one in the pattern-shop and foundry, and one in the smiths' fitting and erecting shops. The students will be engaged in mechanical drawing, estimating and calculating, pattern-making, and constructing machinery for the market. Lectures will be delivered from time to time by the principal or by some eminent professor, on subjects connected with theoretical and practical engineering, and the students will be required to pass an examination upon such lectures at the expiration of each term. Mr. J. W. Wilson is the principal. The code of regulations which has been drawn up shows that work is intended, not sham; and we cordially wish success to the undertaking. The foundry, smithy, pattern-makers', fitting, and other shops that are being fitted for the purposes of the engineering class will be finished and the tuition commenced before the end of the year.

Classes for the study of drawing and of modelling in clay are in operation, under the direction of Mr. W. K. Shenton.

FROM AUSTRALASIA.

VICTORIA.

Melbourne.—The Prince of Wales Opera House has been built according to designs furnished by, and under the superintendence of, Mr. Geo. R. Johnson, architect. The site is that where the Varieties once held sway, opposite the Theatre Royal. The piece of ground extends from Bourke-street to Little Collins-street, being a depth of 315 ft., and possesses a frontage of 66 ft., being the same area as that of the Theatre Royal. The theatre will be approached by three entrances from Bourke-street to the auditorium, and two entrances from Little Collins-street for the use of the stage and for means of escape in case of any sudden panic. The western entrance from Bourke-street will be for the grand tier or dress-circle alone. A polished bluestone staircase leads to the level of the grand tier. In this entrance there is a flower-stall formed in a recess in the wall. There are also fruit-stalls on each tier. Adjoining the grand tier are a large crush-room, *café*, ladies' cloak-room, and lavatories. There are only three rows of seats in the dress circle, but ample provision is made for extension. The seats are of polished cedar on iron framework, filled in with cane, with movable cushions for the winter season. The seats in the stalls will be of similar construction. At the back of the dress-circle is a spacious promenade, fitted up with marble tables and couches. Under the stage there is a depth of 20 ft., in order to sink large set scenes; the height above the stage is 48 ft. The ceiling is in the form of a large dome, with a sunlight in the centre 15 ft. in diameter. There is a large ring of silvered glass, and from this shoot rays of gold on a blue groundwork, filled in with gold stars. This sunlight supplies light to the whole of the auditorium, so that chandeliers attached to the front of the tiers are unnecessary. The decorations throughout have been executed by Messrs. Schemmell & England, under the direction of the architect. White and gold are the chief ornamentation. There is accommodation for seating 2,500 persons, and this can be increased to 3,000, exclusive of private boxes. The seating to the dress-circle and stalls has been manufactured by Messrs. Cohen, Brothers. The ironwork has been executed by Messrs. Joseph Laughton & Co., and Mr. T. Laughton. The plasterers' work is by Mr. Parry. The general scenery has been painted by Messrs. Fry, Holmes, Clint, and assistants. The act-drop has been painted by Mr. A. C. Habbe, the artist who painted the scenery and ceiling of the Princess Theatre, and of late has been engaged in Sydney. He has also left his mark in San Francisco and on the Continent of Europe. The gasfittings have been carried out by Messrs. Hague & Colley, of Emerald-hill. Messrs. Rocke & Co. have done the upholsterers' work. The whole of the works were contracted for by Mr. G. Cornwell, the contractor who also built the late Haymarket theatre and the Olympic. He has completed the whole within three months from the date of commencement. Mr. Cornwell has been assisted by his head foreman, Mr. James Johnson. There is an entire absence of paper and canvas on the walls and ceilings. The total cost will be about 15,000*l.*

Williamstown.—Trinity Church of England, which will be a prominent feature in Williamstown, is built in the Early Decorated style, of blue-stone with free-stone dressings. It has nave, aisles, chancel, organ-chamber, vestry, and lofty tower and spire. The lower slope of the tower forms a porch, and the roof is of open timber-work. The clearstory and nave roof are supported by ten arches, with Malmsbury stone pillars. The length of the nave and aisles is 81 ft., width 50 ft.; the length of chancel 28 ft., width 22 ft. 6 in.; organ-chamber, 17 ft. by 16 ft. 1 in.; tower, inside 14 ft. square; height to top of spire, 168 ft.; height of nave-walls from floor, 34 ft., to ridge, 55 ft.; height of aisle-walls, 16 ft. The doorways are deeply recessed, having three pillars in the depth, and the arches have bold mouldings. The window near the central entrance of the nave has four lights with geometrical tracery; the chief window of the chancel has three lights, and the aisle and clearstory windows have two lights each. Considerable cost was incurred in obtaining a proper foundation for the walls and pillars of the church, the site being covered with large boulders and other unsafely placed stones, which have been removed and the space filled with concrete. The building will accommodate upwards of 600. Mr. Leonard Terry is the architect. Our authority is the *Australian News*, which gives a view of the edifice, and the following.

Mount Gambier.—A new Presbyterian church has been recently opened at Mount Gambier. It is constructed of the salmon-coloured stone locally called dolomite, with white coral limestone string-courses and facings. The style is Early English, with enrichments in bands, mouldings, labels, and buttresses of a later period. The windows are lanciform, with mullions and tracery, and the main entrance is in the western gable, beneath a large four-light traceried window. A tower, with belfry and spire, occupies the north-western corner of the edifice, designed to contain a gallery-entrance and stairs. The church is on a gentle eminence, a very short distance north-west from the centre of the town. The interior dimensions are 65 ft. by 38 ft., and it is calculated to seat over 400 persons. The lofty ceiling is open, with stained roof-timbers and lining, with tracery enrichments. Just within the western door is a stone vestibule, and

this gives access to two aisles, which divide the sittings into the usual sections. The floor has an incline of 2 ft. from the western door to the preacher's rostrum, to which access is obtained from a vestry. The total cost of the building is understood to be about 2,000*l.*

Sandhurst.—The *Bendigo Advertiser* reports the opening of the new Sandhurst Mining Exchange. The *Advertiser* says:—

"That the interior of the new exchange presented a truly magnificent appearance. The elaborate ornamentation of the building was much admired, and its convenience and suitability for the purposes for which it is designed was admitted on all hands, while its great extent seemed to take every one by surprise. Ranged on each side are cedar desks, tables, chairs; in fact, every convenience possible for the transaction of business. The lower floor of this hall would easily and comfortably accommodate some 2,000 persons."

A new Wesleyan Church, in Golden-square, Sandhurst, which is now in course of erection, is from designs by Messrs. Crouch & Wilson, of Melbourne. It is to be built wholly of brick, on stone foundations, in the Early Decorated style. The exterior is relieved with dressings of white bricks and pressed cement. The turret has a slated spire rising to the height of 110 ft., and will be furnished with a large bell. The side walls are 24 ft. high, the length and width of the church being respectively 90 ft. and 45 ft. in the clear. At the rear of the church there are three vestries or class-rooms and a deep organ-loft, in which it is intended to place an instrument to cost 350*l.*, having modern improvements. The height of the church to the ridge is 46 ft. Galleries are planned all round the church capable of accommodating nearly 500 hearers. The estimated accommodation of the whole edifice is 1,500. Attention has been given to means of ventilation, and the requirements of the Central Board of Health as to external doors have been complied with. There are six doors to the body of the church, and four to the galleries. The total cost will be about 6,000*l.* A portion of the design was erected about two years since; and the remainder now in hand is to be completed early next year.

Abbotsford.—The (R.C.) Church of the Immaculate Conception, erected in the Convent of the Good Shepherd at Abbotsford, is a building of blue stone, with freestone dressings, and will, when the whole of the design is carried out, cost upwards of 8,000*l.* At the present time only a portion of the building has been completed, but this is sufficient to hold 800 persons, and has cost 3,600*l.* The plan of the church is cruciform. The eastern transept is intended for the accommodation of penitents, and has been completed. Of the western transept, intended for the use of the public, only a small portion has been built. The nave is unfinished, though intended exclusively for the use of nuns. Internally, the extreme length of the church will be 110 ft., by a width of 25 ft. across the nave, and 82 ft. across the transepts. Only the northern end of the church has at present been built. It will eventually extend to a further length of 75 ft., divided about 18 ft. from the extreme end by a partition, open at the top. This end will also be octagonal in form, and will be divided, like the transepts, into two floors, the upper one to be used as a choir, and the lower devoted to conventual requirements. Two-light traceried windows will light the nave, the designs of which will vary throughout. Internally, the roofs are sheeted so as to form a six-sided barrel, divided into panels by the ribs. The entire of the woodwork has been stained and varnished. Bluestone has been selected for the superstructure, Malmsbury stone for the springs, bases, and copings, and Spring Bay freestones for the dressings to the doors and windows. The works have been carried up under the immediate personal superintendence of the architect, Mr. T. A. Kelley, Mr. Thompson acting as his clerk of works; while Messrs. Reid & Stewart, of West Melbourne, were the contractors for the undertaking.

Artizans' School of Design, Melbourne.—The third annual meeting for the distribution of prizes to the pupils of this school was held on July 19th, in the Trades Hall. Judge Bindon occupied the chair, and the hall was filled by young people. On the walls were exhibited a number of admirable drawings by the pupils. The report stated, that during the past twelve months the school had continued to be prosperous. There were now 194 pupils on the roll.

East Collingwood School of Design.—The first annual meeting and distribution of prizes to the pupils at this school took place on July 26th, in the local council-chamber. The mayor of the borough (Mr. Rushall) occupied the chair. The secretary read the report, from which it appeared that in the first quarter of the year 55 pupils joined, the average attendance being 45. In the second quarter there were 62 pupils,—average attendance, 40; third quarter, 41 pupils,—average, 26; last quarter, 50 pupils,—average, 36; making a total for the year of 129 pupils, with an average attendance of 44.

The Census of Victoria, 1871.—Returns of the census of the colony, taken on the 2nd of April, 1871, have been laid before the colonial Parliament. From these it appears that, of the total population of 731,528 in the colony on that date, 401,050 were males, and 330,478 were females; the Chinese numbered 17,935, of whom 17,899 were males, and 36 were females; and the aborigines 1,330, of whom 784 were males, and 546 were females. There were 150,618 occupied and 6,997 unoccupied [Colonial] habitations in the colony, and 866 in course of erection. Since 1861, the males increased by 22 per cent., and the females by 56·13 per cent. The population in the cities, towns, and boroughs was 374,150, the males exceeding the females by 6,700. The increase of population in the mining districts since 1861 is 42,247. There were 38,588 occupiers of land, who held 36,928,104 acres. Nearly 20,000,000 acres were still unoccupied. There were under cultivation 804,508 acres. There were in the colony,—209,025 horses, 212,193 milch cows, 564,534 other cattle, 10,477,976 sheep, 188,109 pigs, and 122,164 goats. The live stock numbered 6,641,023 in 1861, and 11,643,837 in 1871. Between the two periods the number of sheep was almost doubled, having been 5,780,806 in 1871. The table showing the religions of the people gives 257,835 Episcopalians (including 5,997 Protestants not otherwise defined), 112,983 Presbyterians, 94,220 Wesleyan Methodists, 18,191 Independents or Congregationalists, 16,311 Baptists, 170,620 Roman Catholics, and smaller numbers of various other sects, besides 17,650 Pagans. From the table showing the birthplaces of the people it appears that 329,597 were born in Victoria, 28,669 in other Australian colonies and New Zealand, 164,287 in England, 6,614 in Wales, 56,210 in Scotland, 100,468 in Ireland, 3,870 in other British possessions, and 16,637 in Continental Europe and the French colonies (of whom 8,995 are from Germany).

NEW ZEALAND.

Queenstown.—An Athenæum and Town-hall has been erected by a joint stock company (limited), with a capital of 1,500*l.* in shares of 5*l.* each. The materials employed are stone and brick, finished outside in Portland cement and inside in plaster. The accommodation provided is as follows:—On the ground floor: entrance-hall and staircase, coffee-room and council-chamber, and concert-hall, the latter 55 ft. long by about 30 ft. wide and 19 ft. in height, lighted by ornamental lantern lights, and having a gallery in the end, the front of which is finished with ornamental open woodwork. On the first floor there are library and reading-room, lodge-room, and ante-room. The design of the building is in the Italian style of architecture. The principal part is of an ornate character, with a balcony, to be used by public speakers. The architect was Mr. F. W. Burrell, of Queenstown. The contractors were Messrs. Smythe & Arnal.

HOSPITAL FOR SICK CHILDREN, PENDLEBURY, MANCHESTER.

The Children's Hospital, which has been for the last eighteen months in course of erection on an elevated site at Pendlebury, four miles to the west of the city of Manchester, under the superintendence of Messrs. Pennington & Bridgen, architects, of that city, whose designs were selected in a limited competition, is fast approaching completion.

The building is intended to accommodate the establishment now located in Bridge-street, and which has, for some years past, owing to its situation and the small extent of its premises, been found totally inadequate to the wants of the city and to the successful working of an institution of this kind.

In many respects this hospital must be considered an advance on the arrangement of similar buildings on the pavilion system, inasmuch as, with the exception of the administrative block, it is one story only in height, an arrangement which, while it completely embodies the idea of each pavilion containing within itself a complete hospital, and counteracting the serious evils which are always experienced by the hospital atmosphere ascending through the staircases when the wards are placed one over another, diminishes both the labour and cost of administration. The distance, also, between the pavilions (100 ft.) and a very large air-space afforded to each patient, upwards of 1,600 cubic feet, and the abundance of light throughout the building, are also noteworthy.

The hospital will accommodate 170 patients when completed, but at present only three of the pavilions on the north side of the corridor have been erected; the administrative portions, however, for the entire hospital are, in all respects, finished and fitted up.

The land falls very considerably from the north to the south, which, though it has added somewhat to the cost of the building, has enabled the architects to place all the kitchens, stores, and offices in the necessarily formed third story (the corridors being level) under the administrative block, and to devote the whole of the ground-floor to purely hospital purposes and to the accommodation required for the resident surgeon, matron, and other officials of the establishment.

On the first floor are the sleeping-apartments for the nurses and servants in the north and south wings respectively, to which separate staircases give access and effect the necessary separation.

Each pavilion is arranged for twenty-six patients, with a window between each bed; is 100 ft. long, 26 ft. wide, and 16 ft. high to the flat ceiling; and is heated by four open tiled fire-places in the centre of the wards, built back to back. At the entrance to each pavilion is a special ward for two beds, a nurses' kitchen, and a linen, brush, and water closet. At the other extremity are baths, lavatories, and water-closets, on a scale adapted to the age of the patients, and a verandah, accessible from the pavilions.

The extreme easterly pavilion being devoted to fever patients, a separate entrance and reception-room are provided.

The pavilions are connected by a spacious corridor, 12 ft. wide, ventilated and lighted on both sides, with an open boarded ceiling, and octagonal lanterns at the intersections of the main with the connecting corridors. The operating-room, with the ward for one bed attached, the gymnasium or play-room, reception-room for general patients, together with the dispensary service (with lifts from the basement), linen and house-keeper's rooms, are placed conveniently on the main corridor.

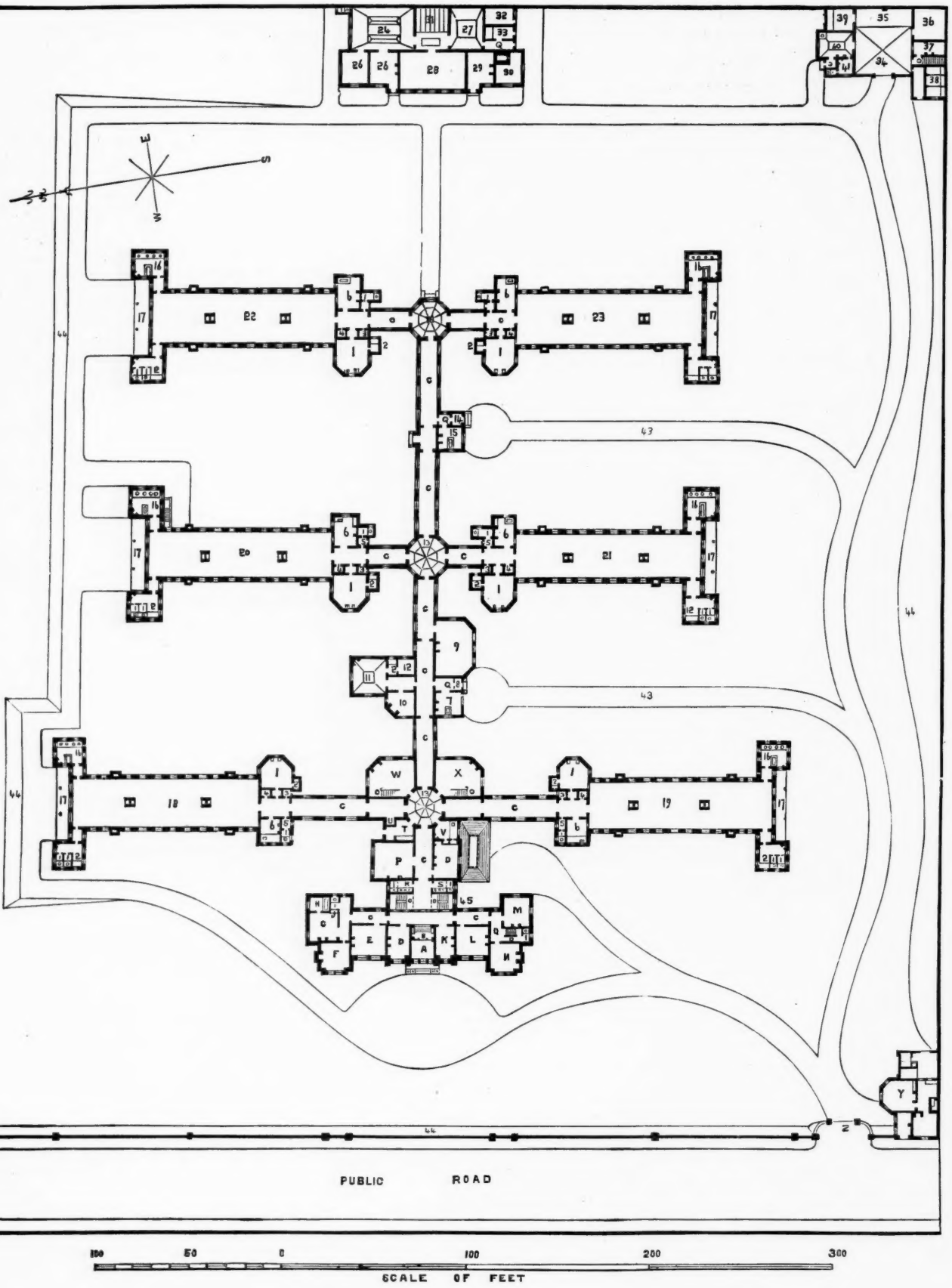
The remainder of the building consists of the laundry and block of buildings containing the stables, coach-house, *post-mortem*-room, dead-house, &c. The lodge-entrance is on the road approaching from Manchester. The administrative block is surmounted by a clock-tower, rising to a height of 100 ft.

All the buildings are of plain but substantial character. The front pavilion, administrative block, and lodge are faced with yellow Ruabon bricks; all the cornices and chimney-tops have been executed in similar materials, interspersed with a few bands of chocolate glazed bricks. The stone, of which a sparing use has been made, has been quarried in the locality. The other buildings are of common brick, with arches in stocks, an earthenware or damp-proof courses being carried round all the walls. The floors of the pavilions are of oak. The internal walls are finished in Parian cement, and the windows glazed with plate-glass. The walls of the kitchen, and of all lavatories, water-closets, and bath-rooms are to be lined to the height of 5 ft. with glazed wall-tiles; and the whole of the woodwork is of red pine, stained and varnished.

The floor of the main corridor is paved with patent concrete, with a border of Staffordshire tiles on each side. The corridors of the administrative block are fire-proof, and, together with the vestibule and entrance-hall, are laid with Minton's tiles. The carriages, landings, and rims of the nurses' and servants' stairs are of iron, with treads of teak.

Mr. W. Southern, of Manchester and Salford, is the contractor for the entire building, including the boundary walls and fences. Messrs. Willson supplied the cooking and heating apparatus, gas and water mains, engine, boiler, &c., for the washhouse, which is fitted with Messrs. Bradford's washing-machines. Mr. George Gilbert executed the earthworks, formation of roads, and the drainage.

The total amount of the various contracts is 15,500*l.*



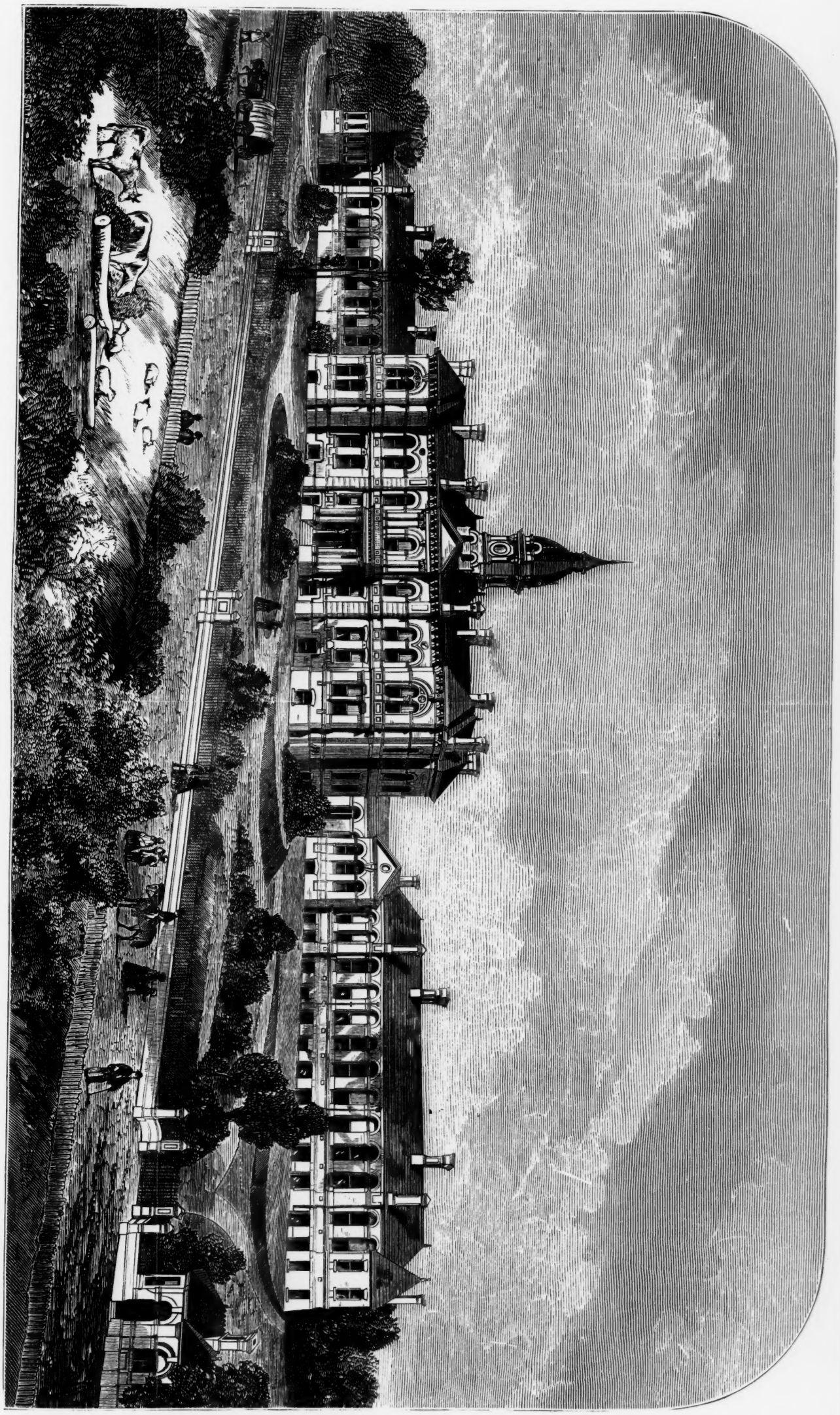
REFERENCES.

A. Vestibule.
B. Hall.
C. Corridor, 12 ft. wide.
D. Surgeon's room.
E. Consultation-room.
F. Resident Surgeon.
G. Surgeon's bed-room.
H. Surgeon's bath and drilling room.
I. Water-closets.
J. Cupboard.
K. Visiting Physician.
L. Committee-room.
M. Visitors' or waiting room.
N. Matron's room.
O. Staircase.
P. Nurses' dining-room.
Q. Passage.
R. Nurses' lavatory.
S. Officials' lavatory.
T. Service-room.
U. Dinner and coal lift.
V. Housemaid's pantry.
W. Dispensary.
X. Linen-room.
Y. Gate-keeper's lodge.
Z. Entrance-gates.
1. Special wards, two beds each.
2. Sink-room.
3. Brushes.
4. Linen.
5. Lobby.
6. Nurse.
7. Reception and bath room.
8. Porch.
9. Gymnasium.
10. Ophthalmic ward.
11. Operation-room.
12. Instrument-room.
13. Lantern.
14. Entrance for fever patients.
15. Fever reception and bath room.
16. Lavatory and bath-room.
17. Verandah.
18. Pavilion ward for 26 beds.
19. Ditto, ditto.
20. Ditto, ditto.
21. Ditto, ditto.
22. } Pavilion fever ward,
23. } 26 beds.

Wash-house and Stable Offices.

24. General wash-house.
25. Officials' wash-house.
26. Sorting-room.
27. Fever wash-house.
28. Laundry.
29. Packing-room.
30. Foul linen and disinfecting room.
31. Drying-room.
32. Patients' clothes.
33. Engine-room.
34. Stable-yard.
35. Shed for hearse.
36. Coach-house.
37. Harness-room.
38. Stable.
39. Dead-house.
40. Post-mortem room.
41. Ante.
42. Entrance to kitchen offices on basement floor.
43. Carriage drive.
44. Terrace.

HOSPITAL FOR SICK CHILDREN, PENDLEBURY, MANCHESTER.—*Plan.*



HOSPITAL FOR SICK CHILDREN, PENDLEBURY, MANCHESTER.—Messrs. Pennington & Bridgen, Architects.

THE COST OF PAVING.

The following tenders, received for paving Chipping Barnet, Herts, under the direction of Mr. John Ladds, architect, afford information. The quantities were supplied by Mr. T. Ladds:—

	High-street. New York Stone.	Wood-street. Old York Stone.	Union-street. Brick.	New-road. Brick.	Moxon-street. Brick.	Total.
G. Aspinall & Sons	£2,053 6 0	£469 13 0	£582 8 0	£328 13 0	£306 14 0	£3,740 19 0
T. G. Alderson	1,998 10 0	636 0 0	368 0 0	280 0 0	198 10 0	3,481 10 0
P. Burton	1,810 0 0	394 0 0	440 0 0	258 10 0	182 10 0	3,089 0 0
Lloyd	1,815 7 7	393 14 4	369 16 6	245 7 10	184 15 0	3,009 1 3
Ewens	1,649 1 4	235 2 0	389 3 0	222 7 0	165 18 0	2,661 5 4
J. Knight & Sons	1,495 0 0	339 0 0	368 0 0	210 0 0	153 0 0	2,565 0 0

Alternative Tender for Paving the Streets with Patent Victoria Stone, 2 in. thick.

	New Victoria Stone.	Old York Stone.	New Victoria Stone Paving.			
Patent Victoria Stone Paving Company	£1,427 0 0	£383 0 0	£445 0 0	£253 0 0	£217 0 0	£2,725 0 0
Ewens	1,508 0 0	235 2 0	487 3 0	273 4 0	211 5 0	2,715 6 0

For Asphalting alone, exclusive of Curbs and Ground-work connected with same.

The Val De Travers Asphalte Company	£849 0 0	—	£290 0 0	£194 5 0	£135 5 0	£1,460 0 0
General Asphalte Co.	1,052 10 0	—	363 2 0	242 16 0	169 0 0	1,827 18 0

Mr. Ewens's tender has been accepted, subject to approval of sureties, &c.

THE LABOURING POPULATION.

In a South of England newspaper, a few weeks ago, I saw the statement of an agricultural labourer, living under forty miles from London. He says, "My wages are 12s. a week. I have a wife and five children to support. I spend my 12s. thus:—Rent of cottage and garden, 2s. 2d. per week; eight loaves of bread, at 8½d. —5s. 6d.; 1½ lb. of bacon, at 10d. per lb., 1s. 3d.; firing, 1d. per day—7d. per week; leaving for tea, butter, sugar, soap, cheese, and candles, 2s. 6d. per week." Much has been recently said upon the deterioration of the agricultural labourer, and it has been ingeniously explained that the cause is to be ascribed to inter-marrying.

I am convinced there are many causes in operation rapidly deteriorating the race of agricultural labourers in England. 1st, as the above statement will show, they are miserably underfed, and we all know the animal frame cannot be developed unless it receives the requisite support. For instance, look at the sheep and cattle, and ponies, reared on bleak moorlands. 2nd. The habitations of the labouring classes of England are small, overcrowded, and generally situated in the most unhealthy spots; often beside some brook, or elsewhere, on some out-of-the-way spot of little value. Anywhere will do for the site of a row of cottages, as long as they are far enough from a gentleman's grounds; therefore, if it is desirable the gentleman should secure the healthiest spot in the locality, the cottagers must accept the worst. Beggars must not be choosers. I have seen cottages in country districts that are a positive disgrace to a civilised country, these same cottages belonging to persons of great influence, which of course secured them immunity from the visits or inquiries of the sanitary inspector.

In addition to the violation of the merest rules of sanitary science in the cottages of labourers in the country, a large proportion of the strongest and most energetic leave the locality either for manufacturing or mining districts; emigrate, or go for soldiers, policemen, or sailors, and a very small portion of those that once leave an agricultural district ever return to settle there. It is the worst that stop quietly at home, and the best, as far as regards energy, that leave the locality or the country.

The populations of the industrial centres of England have a deeply-impressed conviction that the country is done up for the working class. I have seen them in possession of passage tickets for the United States, even when their trade has been in a prosperous state; and when questioned, they would remark, there was no telling how soon there might be a slack time come, as there was no dependence to be placed in work, and directly there were symptoms of there being a slackness they should be off to America. If a man has high wages in England, in comparison with the working man of France and Germany, his cost of living is very much greater. Some thirty-five years ago, several thousand weavers migrated from England to Saxony, to the great detriment of their English employers; they got 6s. per week in Saxony, but then they could purchase more for that 6s. there than they could for 20s. or 24s. a week in England.

I anticipate an exodus of the working classes from England to the United States, especially as the resources of that country are being developed daily. The iron ore of the shores of Lake Superior, the coal-fields of Indiana and Nova Scotia, may be destined to become vast centres of industry at present unthought of. For the Nova Scotia coal-pits machinery is being made in this locality; and in the course of a few years, instead of the cry being, "Ireland for the Irish!" it may be, "America for the English!" but in a different sense.

Any man willing and able to work ought never to be in want of remunerative employment. But the feeling of employers or the buyers of labour has been that they ought to buy labour at whatever price they choose to offer; and when a man did not feel disposed to work for their terms, they were highly indignant that their offer was not gratefully accepted, however inadequate. That such a state of things should be customary sufficiently shows the degraded, servile position of the labourer of England.

Just shift the scales, and what indignation would be expressed if a buyer of merchandise were to tell the seller to deliver a certain quantity of goods, and after the buyer had received them he paid the seller what price he thought fit, and if the seller grumbled, the buyer told him he would prevent him selling to any one else.

That the upper classes might do more for the welfare of the lower can scarcely admit of a doubt. But there seems to be a steadily-increasing antipathy between them, which the occasional indiscretions of the great unpaid do not tend to smooth down. The enclosure of commons, the game laws, the throwing of small or moderately-sized into overgrown farms, that are half-cultivated only, all tend to operate against the interests of the agricultural labourer. The game-preserves tend to keep large areas from being cultivated, to say nothing of the injury done to the crops of the farmer by the system. It is also bad in principle. It is hopeless for a working man to think of acquiring even a small freehold in England. A small freehold allotment, at an exorbitant price, he might, by great denials, acquire. I have had cottage allotments pointed out to me, in the adjoining county of Yorkshire, that a working man bought, one for 12s. 6d. per square yard, or at the rate of 3,025*l.* per acre; and I was told that it was worth 20s. per square yard at the present time, or 4,840*l.* per acre. I admit this is an extreme case: still, there is very little chance of the lower classes acquiring any freehold land in England, as there is nothing that is bought or sold in England that there is so much difference between the wholesale and retail prices as there is in land. I have known land worth about 40*l.* or 45*l.* per acre, in a country district about half a mile from a small town, and when cut up in quarter-of-an-acre pieces, eligible for gardens, 3*l.* per perch, or even more, asked for it. This is purchasing garden-land with a vengeance, and shows the little prospect an English workman has of acquiring a cottage and garden of his own.

A tenant farmer is sadly under the caprice and whim of his landlord, who, if he cannot at once turn him out, can make matters very awkward for him; for instance, in many cases preserve so much game as to nearly destroy his crops, to say nothing of having the tenant farmer and his men systematically annoyed by the gamekeepers. In too many instances a tenant farmer is deterred from improving the land he rents, lest he should by such improvements have his rent raised next term.

Nearly every other branch of industry, excepting agriculture, may be overdone. It is not a great calamity to have more bullocks, cows, and sheep than the population can eat, as in Australia; neither is it a very great misfortune to have good wheat in such abundance as to be worth only 1s. 6d. per bushel, as I have seen was the case in some of the Western States of America,—Illinois, I think.

The proportion of waste lands in England is enormous, when the length of time the country has been a leading European Power, and the denseness and requirements of the population, are taken into consideration. In these particular respects it compares most unfavourably with Belgium, where almost every blade of grass is utilised. I wonder what some of the small Belgian agriculturists would think if they were located upon some of the farms that have hedgerows all round the fields, one to two perches in width, with here and there a coppice plentifully stocked with strictly-preserved game. I maintain, as well try and mix oil with water as think of a game preserve or hunting-ground in a well-cultivated district. The one is an imitation of a primitive state of nature, and the other a refined state of civilisation, and each in its most prosperous days is hundreds of years apart from the other. I have seen somewhere in print that 500 acres of hunting-ground only yield as much support to a population as one acre of cultivated land, and I am under the impression this comparison was made in North-West America, where large game was abundant; but it is now becoming a thing of the past, owing to the influx and increase of population; and if the preserving of game is not compatible with the requirements of an increasing population in such a vast area as North America, where freehold land is worth less than a year's rental of the same area in England, how injudicious it must be in England, with a large population requiring land to cultivate, and largely dependent upon foreign countries for agricultural produce for her population, in fact, to live upon. Were we to read in ancient history of an isolated nation keeping land out of cultivation for amusement, and sending vessels across the seas for food their land could partly produce, what should we think of such a people? And that is not all: we have an agricultural population ready and willing to till these same waste lands.

A Voice from the North.

THE NEW WORKS AND BUILDINGS ON THE GREAT NORTHERN RAILWAY.

The vast expansion of the Great Northern and Midland Railways in new works and buildings connected with their respective undertakings has, within the last few years, been something marvellous; and an analysis of the expenditure of the first-named company upon works in progress during the past half-year, as shown by the accounts, as well as the prospective expenditure on other new works which are about to be commenced, is a proof of the great resources of the company. It appears that during the half-year the completion of sundry land-purchases and works about London, and the widening of the lines between London and Peterborough, amounted to 47,457*l.*; the extension of the telegraph-block system absorbed 4,464*l.*; and a new goods station at Leeds, 16,040*l.* The lines in course of construction wholly owned by the company include the Bradford, Eccleshill, and Idle, and Idle and Shipley Railways, and the Batley and Dewsbury extension, on which the sum of 64,379*l.* has been spent during the past half-year. The contributions to other new lines now in progress, in which the company is jointly interested with the Midland and Manchester and Sheffield Companies, and which include what are known as the "Cheshire lines," were 88,267*l.* The subscriptions to these lines, with the new line from Manchester to Liverpool, and the Liverpool new central station, now in course of erection, have already absorbed no less than 1,288,880*l.* of Great Northern contributions; and the sum which the company will yet have to contribute towards the completion of these particular works is estimated at 425,424*l.* The magnitude of the works in connexion with the Liverpool extension and the very large new central station there, is proved by the fact that the amount contributed by the Great Northern Company only represents about one-third of the entire cost of the undertaking, inasmuch as the Midland and Manchester and Sheffield Companies contribute in equal proportions. The aggregate cost of these works alone, when completed, may therefore be set down at between 5,000,000*l.* and 6,000,000*l.*; but the expenditure, large as it is, is expected to be remunerative, as it will, amongst other things, give the three associated companies

direct access from Manchester to Liverpool, for which they are now paying the London and North Western Company upwards of 60,000*l.* a year in consideration of running over twenty-four miles of the last-named company's line; and the associated companies will also—in addition to having direct and independent communication between London and Liverpool,—secure the advantage of being competitors for the enormous local traffic between Liverpool and Manchester. The new railway between the two great Lancashire towns is now about completed, and it is intended to open it for goods traffic immediately, and for passenger traffic in spring; but the works on the central station at Liverpool are so heavy that it is not expected to be ready for opening before July or August next. The future expenditure of capital on the Great Northern line on works in progress was estimated last year at 1,440,356*l.*, but to this there is now to be added the extensive outlay to which the company is committed by the passing of the Acts of last Session of Parliament. These Acts involve the construction of the lines from Nottingham to Derby and Burton, to the collieries in the Erewash Valley, the new line from Bradford to Thornton, and the important junction by which the Great Northern will gain access to the North London line at Highbury, and also by this route to the City. The cost of these various new undertakings is estimated at not less than 2,861,700*l.*, bringing up the total future expenditure of the company in new works to the sum of 4,302,056*l.* With the exception of the Midland, which has very extensive works on hand in different parts of the country, this is the largest amount required in new works by any of our great railway companies.

SCHOOLS OF ART AND OF SCIENCE.

Hanley School of Art.—The annual meeting of the friends and supporters of this school has been held in the town-hall. The hall was crowded, and the proceedings, the successes of the school at the recent national competition having been of a striking character, were animated and enthusiastic. A large number of meritorious models and drawings were exhibited, and remained on view on the following day. Mr. George Melly, M.P., presided. The report of the committee said:—In presenting their annual report your committee express more than ordinary satisfaction with the continued and increasing success of the institution. In the last report the committee ventured to express a hope that the remaining room at their disposal would soon be occupied, and they are gratified to say that not only has this hope been realised, but during the year so many new students have sought the advantages of the institution as to make it necessary that the committee should provide additional teaching accommodation. Since your last meeting the committee have appointed Mr. Joseph Ellis an additional master. The actual working of the school under Mr. Bradbury has more than justified the high character with which they received him. The results of his efforts, combined with those of the assistant masters, Mr. Lees and Mr. Ellis, have been a marked advancement of the pupils, a larger number of works for national competition, and a higher acknowledgment of merit by the department than any hitherto attained by the school.

Liverpool Operatives' Science Classes.—The distribution of the prizes gained by the students attending these classes took place at the Trades-hall, Duke-street. Owing to the inclemency of the weather, the attendance of members was but limited. The chair was occupied by Professor Henry F. Roscoe, F.R.S., who distributed the prizes. Mr. M. Fitzpatrick, the hon. secretary, made a brief statement, as to the progress of the classes during the past session. The session, he said, had been a very satisfactory one. Fifteen students had passed in chemistry, and eight in mathematics,—a result with which the committee are perfectly satisfied. With regard to the arrangements for the next session, they had taken up one or two additional subjects,—free-hand drawing, acoustics, light and heat, magnetism, and electricity. Professor Roscoe delivered an address on the subject of the scientific education of the working man. He divided the labouring men of all nations into two classes,—those who worked with the brain and those who laboured with the hand. The man who worked with his brain by an expenditure of nervous energy was as much a working man as he who laboured solely by the force of his muscles. Indeed, they had only recently a sad instance of the complete destruction of such nervous energy in the case of the lamented judge who had just lately died. He died a martyr to hard work as much as did the slave who fell under the lash of his master. The great object of education was to enable men to ascend in the scale of intellectual development; it enabled men to use their nervous instead of their muscular energy. There was in the nation a certain amount of nervous energy, just as there was in a pound of coal a certain amount of latent force; and the object of education, he took it, was to get out of the nation more of its latent energy than was previously developed, to gradually raise the whole mass of the people from the exertion of their power as merely mechanical up to an exertion of their intellectual activity, which, when educated, they were able to use.

Leeds School of Art.—Speaking at this school, Sir John Pakington mentioned a touching incident which is worth columns of speechifying as an encouragement to perseverance under difficulties. Holding in his hand a drawing which had been done by a former pupil of that school, he said,—Here was a boy in this Leeds school so poor, so humble, that he worked at that drawing two days without food, in the hope of getting something on which to live. It was an honourable fact, and he hoped it would be widely circulated; it ought to be most encouraging to other students that this young man, evidently a person of talent and an artist, had now obtained complete success, and, after undaunted effort and continual striving, was earning an honourable income, and he had sent from Manchester to Leeds to beg as an especial favour that he might be allowed to re-purchase this picture which he had sold in his moments of distress.

CORPORATE HONOURS TO A SURVEYOR.

On the 11th of this month, the Durham Borough Surveyor, Mr. John Henry Collinson, died of consumption, at the early age of twenty-eight, leaving a young wife to deplore his loss. Mr. Collinson had filled the post of borough surveyor for the city of Durham for about two years only, and had been unable to fulfil his duties for some time past. He came to the city of Durham from Oldham, at which borough, and also Bradford, he had held a similar position.

The corporation of the city, as a mark of esteem, attended his funeral to St. Giles's churchyard, on Monday, the 14th inst., the Mayor, Alderman White, the Town Clerk, and several members and officials of the city being mourners. The Freemasons of the district also attended in regalia, the Granby and Norman Freemason Lodges assembling in great numbers, the deceased being one of the stewards of the Granby Lodge. A great number of working men left their jobs to add their respect to a worthy man's memory, and his professional brethren were present in strong numbers.

SLATES AS A COVERING.

Sir,—Your last week's impression contains a letter on "Worcester Cathedral," objecting to the roof covering, because the slates are similar to those used for ordinary buildings, and suggesting that large slabs should be used instead. Now, without going into the question as to whether the roof-covering of a Gothic cathedral should be copied from an Italian club-house or not, it seems that if the theory of rejecting the use of suitable materials in an ecclesiastical fabric because they are used in buildings erected for domestic purposes were carried out, there would be an end to church building.

With respect to the use of large slabs, the writer some thirty-two years ago superintended the rebuilding of a village church. The roofs had a flattish pitch, with principals at moderate distances, and strong purlins, eaves, plates, and apex-pieces all framed flush on the upper side, covered with two rows of 1-in. planed slate slabs, lapped on the purlins, with fillets over the vertical joints, bedded in oil cement and screwed to the woodwork, making a neat, light, and rain-proof covering, with a panelled appearance to the interior; but it was a failure: the atmospheric vapour, condensed upon the lower surface of the slabs, trickled in a stream from the horizontal timbers, and rendered the church quite unfit for comfortable occupation. Where the slates are small, the currents of air passing through the interstices counteract the evils of condensation, and there is great credit due to the ruling powers of any cathedral who have the moral courage to remove the heavy, costly, and difficult covering of lead from the roof of the edifice under their charge, and replace it with the lighter, cheaper, durable, and easily-repaired material of slate, a good example of which can be seen on Peterborough Cathedral. R. Y.

*** Apart from the real question under discussion, it is not likely that large slabs would be used for the proposed purpose without a ceiling of some kind that would prevent condensation and its annoyances.

HOLLOWAY HALL, LONDON.

This hall, which has lately been erected, was opened on Tuesday evening last. It has a bold, handsome front of brick, with stone dressings and effective carving. The front portion contains committee-rooms, large library and reading-room, billiard-room, &c. The great hall is 112 ft. long and 47 ft. 6 in. wide, with a large room, 10 ft. high, below it, of the same size. The great hall has a dado, some 6 ft. high, of dark brown, then a few lines of colour, and cream-colour above, the ceiling (a panelled one) being nearly white, with simple red lines round each panel. The "Creation" was the oratorio performed at the opening meeting.

Mr. George Truefitt was the architect, and Mr. Ennor the builder.

MONUMENTAL.

The Scott Monument in New York.—The pedestal of this monument, by last accounts, was expected to arrive by the steamer *Iowa* in a few days. On its arrival, it was to be taken, together with the statue (which still remained on the dock of the Anchor line of steamers), to the foot of Fifty-seventh-street, on the North River, from whence they would be transported to the Central Park. In the meantime the foundations were being prepared at the new site on the Mall, so that the work of erection would commence as soon as the granite reached the ground. The announcement was premature that the ceremony of unveiling would take place on the 20th of October.

German Monument in Liege.—A monument has just been completed in Liege to the memory of the German soldiers who died there in the ambulance. It consists of a column, surmounted by the German eagle; and four cannons are placed round it, connected together by chains, so as to form an enclosure.

Memorial in Higham Ferrers.—A monument has just been completed in the churchyard of Higham Ferrers, Northamptonshire, erected to the memory of Mr. A. R. Hacon, surgeon. It consists of a plain column of red granite, 15 ft. high, and weighing about 5 tons. The memorial was erected by the voluntary contributions of 1,160 persons, chiefly of the working classes.

COST OF HORSE AND CART WORK.

The St. George's, Hanover-square, Vestry have received from a committee appointed to inquire into the management of the stable department, the following report:—

"There are two systems for the vestry to consider; first, that of buying eight horses to increase the present number to eighteen, besides hiring for the summer months eight additional horses to stand in the stables. Second, that of transferring the whole of the responsibility of buying and maintenance of horses, carts, harness, &c., to a contractor, thus relieving the vestry from the purchase of horses and carts. The committee having advertised for tenders, report that they have received the following from Mr. Perkins, for a term of seven years:—At per horse per week, 3*l.* 3s. 6d.; from Mr. Covington for five years, 3*l.* 1s. 11d.; ditto, for three years, 3*l.* 2s. 5d.; from Mr. Reddin for three years, 3*l.* 3s.; from Mr. Emerton for five years, 3*l.* 2s. 9d.; ditto for three years, 3*l.* 3s. If the vestry decide upon buying and keeping its own horses, there will be necessary at once an expenditure of nearly 800*l.* to buy eight first-class horses. If the vestry resolve to adopt the contract system, the committee recommends that the tender of Mr. Covington for three years be accepted.—Signed (Col.) Brownlow Knox, chairman.

Addendum.—From inquiries made by order of the committee, it is found that the horse and cart work of the principal metropolitan parishes is done by contract, and there is reason to believe that the same system obtains generally—some parishes letting the watering and slopping by lump sum contract, and others hiring daily as required. A return made of the cost of the stable department, for five years, ending Lady-day, 1871, shows that the average cost per horse, cart, and driver, including every expense except rent, is 2*l.* 19*s.* per week.

H. J. Tompkins, Surveyor."

After some discussion, the vestry decided to adhere to the present system, and not contract.

COVENTRY SEWAGE QUESTION.

Sir,—In your publication for Oct. 12th, under the head of "Settlement of the Coventry Sewage Question," you have conveyed the erroneous expression that some enormously expensive scheme of mine has been rejected. Allow me, then, to state that, so far from this being the case, the adoption of the method of precipitation in preference to the enormously expensive method of irrigation (not at all suited to the particular and peculiar circumstances of the city of Coventry) is consequent upon my earnest representations and advice. T. Hawksley.

*** We simply repeated what the mayor was understood to say.

COLLIERY CALAMITIES.

HOW MANY? ECHO ANSWERS, "MANY."

Again and again the colliery disasters occur, with frightful rapidity. Our Government proclaims that they are not a paternal government: colliery owners decline to do more than they must for preventing holocaust. Pitmen, be independent; organise a penny subscription, and a remedy will be presented from the ranks.

Arkwrights and Stephensons still live:
Nor is England yet *ex*-wise-head.

R. T.

THE ANT NUISANCE.

I have mentioned to a friend in this country that which I have read in the last few numbers of the *Builder* on the "Ant Question." My friend has large experience in building, and considers himself to be familiar with the habits of all animals which interfere with the comfort of the householder. "My remedy," he says, "is one which is disagreeable for the time, but effectual. Let the places frequented by the ants be smeared with petroleum oil, and they will go elsewhere." Destroying the nuisance in its source he seems to consider impossible. I leave this suggestion to the appreciation of your correspondents. A Subscriber in Belgium.

ST. PANCRAS VESTRY AND THE LONDON SCHOOL BOARD.

A special meeting of the vestry of St. Pancras has been held, pursuant to the requisition of nineteen vestrymen, and have resolved:—

"1. That in the opinion of this vestry the School Board for London has lost the confidence of the representatives of the ratepayers of this parish by a course of extravagant expenditure in erecting schools, which have had the effect of closing the schools hitherto supported by voluntary contributions, and more particularly in purchasing a site for 18,000*l.* for the erection of offices on the Thames Embankment, at an enormous cost to the ratepayers.

2. That a copy of the foregoing resolution, with a copy of the resolution adopted at the public meeting of ratepayers held in the Vestry-hall on the 15th instant, be forwarded to the Education Department of the Privy Council, and to the School Board for London.

3. That a copy of each of the foregoing resolutions, with a copy of the resolution adopted at the public meeting in the Vestry-hall on the 15th instant, be forwarded to each of the vestries and district boards in the metropolis, respectfully urging them to call a meeting of the ratepayers of their respective districts to take an expression of opinion as to the policy and expenditure of the School Board for London."

The vestry was very thinly attended, there being only some thirty-three or thirty-four members present, out of the 120 composing the vestry.

Mr. Watkins, in proposing the first resolution, charged the London School Board with extravagance, and doing injury to existing schools, without attending to the education of the very class they were called into existence to look particularly after. He strongly condemned the expenditure of 18,000*l.* on a site on the Thames Embankment for offices, charged the appointment of survey with being a job, and said before the building was finished and occupied it would cost 100,000*l.*

Mr. Hawkins moved as an amendment,—

"That in the opinion of the vestry the School Board for London should compel every child between five and thirteen years of age to attend an efficient school, and to [and should ?] exercise the most careful economy in every department of their work."

The amendment, however, was negatived, and the original motion carried, with two dissentients, — the mover and seconder of the amendment.

Other resolutions proposed were also adopted.

NEW CORN EXCHANGE FOR BEDFORD.

The foundation-stone of a new Corn Exchange for the borough of Bedford has been laid by the lord-lieutenant of the county, Earl Cowper, accompanied by the mayor and other members of the corporation in their official robes, the Duke of Bedford, and others.

The Mayor addressed the company. Some twenty years ago, he said, the adjoining market had been erected, and it answered its purpose for its time. The requirements of the population had so increased that the erection of a new building became absolutely necessary.

Earl Cowper congratulated the town of Bedford on such an increase of trade as to require a new Corn Exchange.

The Duke of Bedford said that he was at that moment having a statue of John Bunyan,—who was so nearly connected with the town,—made; and if they thought it worthy of their acceptance, it would be a great gratification to him to present it to them.

The new building is to be in the Italian style, and its internal dimensions will be about 100 ft. long and 60 ft. broad. It consists mainly of one long room, forming the Corn Exchange, the various offices of the corporation being located in the basement. It will be lighted by three segmental domes in the roof.

Messrs. Ladds & Powell, of Bedford-row, are the architects, and were appointed by competition. The builder is Mr. Moore, of Bedford, and the cost will be about 7,000*l.*

PAYMENT OF ARCHITECTS.

Sir,—At the present time, when strikes are almost universal amongst workpeople, has it ever occurred to you that the principal reasons assigned for them applies equally to the *professional man?*

The cost of nearly everything since I commenced practice (a quarter of a century ago) has increased about 30 per cent., but the fee of 5 per cent.,—which is the utmost ordinarily an architect can charge,—has never been raised.

Would it not be desirable that the institutes connected with architecture and engineering should consider this subject, and see if some revision of fees cannot be arranged?

I am quite prepared to hear it stated that a professional man should not place himself on a level with the ordinary "strikers"; but surely it is reasonable when not only the cost of living, but the very salaries of clerks and assistants are so materially increased, that some addition should be made to the emoluments of the architect and engineer, who appear at present to be about the only people unthought of. Stentor.

WIVELISCOMBE CHURCH.

On Wednesday the new chancel of St. Andrew's Church was opened. The church was erected about forty years since, and superseded a building chiefly of the fifteenth century, having carved oak-work in screen and bench-ends, portions of which, with the old windows, were used in the present church. In common with all churches built at that time, the style is defective, but, thanks to the spacious arcade and height of ceiling, there is not any absolute barrier to improvement. At present the works executed are all in relation to the formation of a chancel, by inclosing a space within a screen westward of the shallow apse hitherto serving as a chancel. The central window of the apse has been built up, and a reredos of Corsham stone erected in lieu of it. This is divided into three gabled compartments, the panels enriched with monograms. A picture, by Broughton, presented some years since by Mr. Collard, of Abbotsfield, is hung over the reredos. The communion-table stands on a paved daïs, and the floor is of ornamental tiles, by Messrs. Maw & Co., of the Broseley Works. The railings are on metal standards, illuminated with gold and colours. There is a descent of two steps to the choir-floor, on which are placed stalls for the clergy and choir, having metal coloured standards, with book-boards for the younger singers. The inclosing-screens, fixed on Bath stone, are of metal, coloured and gilt, by Messrs. Richardson, of London. The contractor is Mr. H. Davis, of Taunton; and the architects are Messrs. Giles & Gane, of London. It is proposed to reseat the whole church.

A BIG CHURCH FOR BRIGHTON.

The Rev. A. D. Wagner has just commenced the erection of an immense building in Ann-street, within a few yards from the London-road, the first stone of which was laid on the 2nd of February. Mr. E. E. Scott is the architect, and the Messrs. Stenning, builders, London-road, the contractors for this edifice, which, we are informed, will not only be the largest church in the county, but will contain as many superficial feet as any church in England, except the cathedrals. We have the following account:—Height from pavement to the spring of the roof, 90 ft.; from the pavement to the ridge of the roof, 135 ft.; 46 ft. space in the clear. There will be eight bays to the church, and the whole length of the building, when the chancel is built, will be 225 ft., so that it may be calculated to hold an immense congregation, all of whom are to be seated in chairs. The walls, which will be all brickwork, with stone bands, are of unusual thickness, as can be already seen. There is a very large semicircular entrance-arch of moulded bricks, of which all the arches will be composed. It is proposed to complete the building in about two years.

THE COAL TRADE.

There is a threatened stoppage of the South Staffordshire Collieries. The colliery engine-tenters of the Black Country, having made a demand for an increase of pay to 5*s.* a day, and for a working day of eight hours, a deputation of men was received at a large meeting, specially called, of the United Coal Masters' Association. It was decided unanimously that the masters could not concede the demand of the workmen, and that they would be allowed to go out. If the men adhere to their resolution, nearly all the works in the district will be without fuel, and above 50,000 men will be locked out. No notification of a reduction has been made, nor is it considered probable that coal will be reduced this side of Christmas.

Matters are evidently coming to a crisis in the Scottish coal trade. The Messrs. Dixon, of Glasgow, one of the largest iron and coal firms in Scotland, have twice reduced the price of coal 2*s.*,—that is, 4*s.*,—within a week. Some of the principal manufacturers of bar-iron in the West of Scotland have determined to suspend operations until the market improves. One of the reasons given for this resolution is, that the cost of producing bar-iron involves, on account of the extravagant price of coal, a heavy loss, and that the demand for their material in the market at the present time is limited.

OPENING OF BAGSHAW HALL, TIDESWELL, DERBYSHIRE.

The opening of Bagshaw Hall has been a subject of festivity at Tideswell, a town about thirty miles from Derby. The building and the fittings are the gift of Mr. John Bagshaw, one of the oldest residents in the town, and the site was presented by the Duke of Devonshire. The hall is principally intended for the use of the Tideswell Old Sick Club, but it will also be let for public meetings and concerts, and the proceeds so realised will be applied to the club funds. The site of the building is in the Market-square, directly opposite to Mr. Bagshaw's house. The entrance is gained by two broad flights of steps, which are lighted by means of two gas-lamps fixed at the top, and on the ground on either side of the steps is separated from the street by an ornamental iron rail. Over the entrance-door is a clock which can be

illuminated with gas. The structure, which is of limestone, is after the Elizabethan style of architecture, and measures 88 ft. by 42 ft. At the right-hand side of the entrance-hall a door opens into a moderate-sized apartment, which will be used as a reading-room, and on the left is a similar arrangement for a committee-room. Over the entrance-hall and the two rooms already mentioned there is a gallery, capable of holding about fifty persons. The hall proper measures 50 ft. by 36 ft., the height from floor to ceiling being 21 ft., and is lighted by five large windows on either side. At the rear of the hall there is a small retiring-room, which also forms a back entrance to the building. A cottage has been provided for the person taking charge of the hall. The whole of the building is fitted up with gas, and heated by means of hot-water pipes. Mr. Samuel Howard, jun., of Stockport, was the architect; and Mr. Bullock, of Tideswell, the clerk of the works. The total cost of the structure is about 2,000*l*.

ST. NICHOLAS PARISH CHURCH, GUILDFORD.

At a vestry meeting of St. Nicholas's parish, held in the vestry of the church, to consider a report relative to the state of the roof, and to act thereon, a report which Mr. Molyneux had obtained from Messrs. Jackson & Shaw, London, builders, was handed in and read, and was found to confirm in every particular, a previous report of Mr. Teulon. Indeed, so insecure is the roof considered to be by those best able to form a sound judgment thereon, that the first step taken by the vestry was to authorise the churchwardens to adopt such measures as would be necessary for the securing of the present building, and the safety of the lives of the parishioners. That being done, the following practical resolutions were agreed to:—

1st. That it is inexpedient to attempt to put a new roof on the present walls of the parish church.

2nd. That a sum of 2,262*l*. having been promised towards the erection of a new church, on a new site near the rectory grounds, a committee be appointed to collect further subscriptions, and to take steps towards carrying out this object.

3rd. That a committee for the above purpose be appointed.

SANITARY AFFAIRS IN PADDINGTON.

The medical officer of health for Paddington, Dr. Hardwicke, has sent in his sanitary report on the parish for 1871–2 to the vestry authorities, and it has been printed by their order.

The density of the district population, the report states, is equal to that of Liverpool, Glasgow, and Manchester,—97·9, 94·8, and 78·6, respectively; being the highest density of population in twenty of the largest towns of the kingdom. Of the whole area of 1,280 acres in the parish, the open fields and part of Kensington Gardens in the parish are estimated at 256 acres, where there are, of course, fewer houses; but this only shows an increase of density elsewhere.

In speaking of the inevitable rebreathing of foul air in close rooms, the reporter notes that it is the duty of those who live in the parish but can remove elsewhere, when and where they like, for health, to remember that the poorer classes in general cannot do so, but are comparative fixtures, and that those favoured ones ought therefore to combine in improving the condition of their less fortunate fellow-citizens as far as possible. It is a scandal, he remarks, that the reverse of this is the rule in spite of all warnings and suggestions; and the industrial orders, like doomed men, look in vain to the Legislature for help.

From a table given it appears that there are six times the number of children amongst the working people compared with an equal number of inhabitants of the squares and mansions.

The filling up of made ground with road scrapings is deprecated as forming unwholesome sites for houses.

On the subject of a constant water supply, Dr. Hardwicke says:—

"In poor neighbourhoods it would be difficult to say what plan is best; in the worst kind of property (of which there is very little in this parish) where expensive brass taps would be stolen, injured, or left running, a stand-pipe from which the inhabitants could fetch water is the simplest and most economical; but on the better class of tenant house property the inhabitants will insist upon a draw-off tap inside the house, or somewhere on the premises at least. The w.c. supply could then remain as now attached to the ordinary cistern, or abolished; a special water-waste-preventer cistern, at a small cost, can be fitted on to the constant supply pipe.

I think landlords must go a step further,—Those who let out floors and rooms to separate families ought to provide a separate water supply on each floor,—that is, a tap and a sink,—the one being quite as essential as the other."

HARDNESS OF WATER.

Sir,—Can any of your readers inform me why the rain-water which flows from our house roof, "covered with ordinary plain tiles," into a tank or cistern formed in a stratum of solid blue clay, is so hard as to be unfit for purposes to which soft water is desirable? Is it owing to some chemical action in the composition of the tiles, or attributable to the stiff and impervious clay?

G. Bunting.

TYPHOID FEVER IN VILLAGES.

A correspondent of the *York Herald* says:—

"Unfortunately our authorities do not seem to note one of the facts of astronomy, viz., that it is not a necessity for large bodies to move slowly. The Public Health Act (1872) requires (amongst other things) the appointment of an inspector of nuisances, and there is a serious urgency in this simple matter owing to the prevalence of typhoid fever in some of the villages. Grimston Smithy, a village which from its elevation ought to be one of the most salubrious spots about York, has had thirteen cases of this fever in a population of fifty, and three deaths. I mention this instance freely, as the epidemic is now subsiding. Other two villages I could refer to, in one of which fatal cases are occurring. The medical profession tell us that this fever is caused by bad air and bad water in the first instance, and then propagated by infection. I am therefore not surprised at typhoid fever in our villages, especially in the streets. The pure air of heaven permeates all Arcadia up to the very doors of the dwellings, and there, in too many instances, it is poisoned by pestiferous drains, piggeries, dungheaps, and cesspools. The beautiful well-water is poisoned by the sewage."

The local Poor-Law Guardians have it in their power, in the meantime, to vastly promote the health of the rural population by ordaining an immediate, independent, and periodical inspection and improvement of sanitary arrangements.

LIABILITY OF A WORKMAN FOR DESTROYING HIS WORK.

At the Sheriff Small-Debt Court, in Edinburgh, before Sheriff Hamilton, William Gray, joiner, Dalry-road, sued Peter Boyle, joiner, Pleasance, for 3*l*. 15s., as the value of five window-frames destroyed by him on the 12th ult. It appeared that the defender was a workman in the employment of Gray, being supplied with wood to make the window-frames. He offered no objections on the score of incompetency, but on being finished the frames were found to be so mortised as to be unfit for the purpose for which they were intended. The defender admitted that the window-frames were made by him in a defective manner, but contended that as they were not destroyed wilfully he was not liable. He did the work the best way he could, and having been dismissed, had raised an action for wrongful dismissal against the present pursuer in the County Justice of Peace Court, but lost his case. After a proof, the Sheriff held that the defender was liable for the damage done, because, if ordinary care had been taken, the work would have been properly executed. A remit was made to a person of skill to assess the damage, and the pursuer intimated that he would limit his claim to two guineas.

CHANGE OF BUILDER UNDER BUILDING ACT.

KNIGHTLEY *v.* WILKINSON.

In this case, heard by Mr. Bridge, Hammersmith Police Court, the defendant, Mr. Wilkinson, is the owner of a building estate at Hammersmith, upon which a large number of houses have been erected. Towards the end of last year, he let a plot of land to Mr. Foulkes, who gave a proper notice, and erected a carcass, but abandoned it at the end of December, when plate-high. In this roofless condition it remained till July of the present year, when the district surveyor found men again working. The brickwork had been undertaken by one man, and the carpenters' work by another. Upon each of these a change-of-builder notice was served; but each returned it, saying he was not the builder, but working for Mr. Wilkinson, to whom a change-of-builder notice was also sent, but who paid no attention: hence the proceedings.

For the defence, the interpretation of the word "builder" was depended upon; but, as the work of finishing was let out to several persons, the magistrate held that Mr. Wilkinson had control, after the manner in which builders usually control their undertakings,—that Mr. Wilkinson had stepped into Mr. Foulkes's shoes,—and he fined him 10s. and costs.

Notice of appeal was given.

CHURCH-BUILDING NEWS.

Meysey Hampton.—The church here has been re-opened for divine service. The architect employed was Mr. James Brooks, of London, and from his designs a school-building for seventy children was completed a year ago. The restoration of the church was then proceeded with, divine service being conducted in the new school during the continuance of the work. Three fourth parts of the church have been renovated internally, in addition to external repairs, and the erection of a vestry. In the nave the ceiling, and the western gallery, have been removed, dilapidated high pews have been replaced by open benches, and the buttresses of the central tower, which had been largely cut away for the greater accommodation of the high pews, have been restored. The south transept has received a new roof, and the masonry of the windows has been renewed. The nave, chancel, and south transept have been paved with Minton's tiles, and the western window of the nave has been filled with painted glass by Messrs. Clayton & Bell. The transepts are Early English, and contain two double-lancet windows, a copy of which has been reproduced in one of the new windows of the nave. The chancel is of the fourteenth century. It contains sedilia and a tomb, which have been repaired. The east window, the masonry of which was in a very shaky condition, has been taken out and refixed; and new freestone panelling has been fixed under the east window, with a view to a future reredos.

Sawbridgeworth.—The old parish church of Sawbridgeworth has been re-opened after having undergone restoration and repair. The work just completed was commenced about four months ago. Formerly the school children were scattered about in seats where they could neither hear nor see; now they have a gallery at the west end of the south aisle. The font has been rehabilitated, and, although composed of some 200 fragments, has all the resemblance at a short distance of a new font. The south door has been restored to its original proportions, and the steps down from it into the church have been moved back to the entrance of the porch. The windows, walls, pillars, and other parts have been repaired, and the masonry made good. Several of the monuments and mural tablets had to be removed in the course of the work, but care has been taken not to damage them. The work has been executed by Mr. John Egan, of Buckhurst-hill. The cost of the whole will amount to nearly 500*l*., which have almost, if not entirely, been already subscribed. The Ecclesiastical Commissioners have caused the chancel to be repaired, at an additional cost of 300*l*., which has been done under the direction of their architect, Mr. Christian. The upper doorway of the rood-loft has been brought to light during the restoration, and a carved head of an ecclesiastic was discovered in use as a stop-gap. The gas is not yet laid on to the church, owing to a want of funds.

Chale (*Isle of Wight*).—The old church here has been re-opened by the Bishop of Winchester. The restoration was not undertaken before it was needed. Standing in one of the most exposed places in the island, the roof had fallen into such a state of dilapidation as to render it really dangerous. The restorations have been chiefly in the form of re-roofing, re-flooring, and re-pewing. In addition to these alterations, the tower has been opened up, and the arches have been relieved of the coating of whitewash with which previous renovators had disfigured them; and while there has been no interference with the prominent architectural features of the building, the church has been so improved as to afford increased accommodation.

Brighton.—A commencement has been made of the foundation for the Church of St. Martin's, to be erected in the Lewes-road, in memory of the late Vicar of Brighton, by his sons. The Rev. A. D. Wagner was present on the spot, examined the plans, and threw in the first shovelful of earth. The foundation-stone is to be laid next St. Martin's Day, and it is expected that the bishop of the diocese will be present at the ceremony. The contract has been taken by Mr. Jabez Reynolds, who will carry out the work from the designs and under the direct superintendence of Mr. Somers Clarke, jun., of Westminster, architect, who has appointed Mr. R. Hayward clerk of the works.

Didmarton.—A new church for Didmarton and Oldbury, to be called the Church of St. Michael and All Angels, has been consecrated by the Bishop of Gloucester and Bristol. It is intended for the use of the residents of the two parishes of Didmarton and Oldbury-on-the-Hill. The nave of the church is built in the parish of Oldbury, and the chancel in the parish of Didmarton. The foundation-stone was laid in the summer of 1871 by the Duchess of Beaufort. The funds for building were gathered chiefly from local sources. The stone, a hard white stone, was given by the Duke of Beaufort; and but a small balance of debt rests on the building. The style is Early English, the building being cruciform in shape,

and consisting of nave and chancel, 85 ft. by 21 ft. wide, north and south transepts, an organ-loft in the angle of the chancel and south transept; and it is intended at some future time,—probably very shortly,—to build an ornamental tower and spire at the opposite side wing, in the angle of the chancel and north transept, where the bell at present is temporarily hung. The local stone is faced with Bath stone dressings, and the high-pitched roofs are covered with stone tiles. The ceilings are open-timbered, the principals being arched, and supported on projecting corbels. The windows are filled with stained glass, the chancel window being one of three lights. The building is warmed with hot air, the apparatus for which is put in by Messrs. Haden, of Trowbridge. The sacrarium and chancel are floored with Minton tiles, and the altar-rail is a simple bar of oak, supported on ornamental iron and brass standards. The architect was Mr. T. H. Wyatt, of London; and the builder and contractor Mr. Francis Brown, of Tetbury. The cost of the building has been about 2,100*l.*

Portsea.—The foundation-stone of a new church, on a part of the glacis of the old fortifications on the landward side of Portsea, and which are now being levelled, has been laid by the Duke of Cambridge. The ground,—about an acre in extent,—has been given by Government, upon representations made by the Bishop of Winchester, and adjoins a thickly-populated district which is principally inhabited by mechanics and the poorer classes and their families, and is also closely contiguous to all the great barracks at Portsmouth and Portsea. The church will contain 1,000 sittings, which are to remain free for ever.

Ashley.—The parish church here has been reopened. Messrs. Clark & Holland, of Newmarket, architects, prepared the plans and specifications of the alterations; and the contract, to the amount of 850*l.*, was secured by Mr. R. Tooley, of the Church Restoration Works, Bury St. Edmund's. The terms of the contract included the provision of a new chancel, with altar, north and south aisles, and organ-chamber, altogether affording extra sitting accommodation to about 160 persons. The structure is of stone, surmounted by a roof of the usual span and dimensions,—the frame of which is of hardened stained pine, and covered with the ordinary church tiles. The windows are of the cathedral glazed pattern. The altar-rails are of iron. The extra expenditure, beyond the contract, will amount to something like 150*l.*, the whole cost of which has been covered by a small rate and voluntary contributions.

Reading.—The alterations and enlargement of St. Mary's Church are almost completed. The west gable of the new aisle is coped with stone, finished with a cross, and contains a fan-light traceried window, the principal mouldings of which are copied from the old two-light window, which formerly stood in the arcade now opened out between the transept and the new organ-chamber. The new aisle is covered by an open stained deal roof, with arched ribs, and windbraces, relieved by plaster work between the rafters. The flooring, seating, and gas standards correspond exactly with the south aisle. The choir-seats and prayer-desks have been remodelled, and the chancel—which has always had a crowded appearance,—is thereby improved. The west gable and buttresses of the south aisle being, with the porch, the only unrestored portions of the old fabric, are under the workmen's hands. The porch was much dilapidated, and is being restored, new windows inserted, and new gable coping and brass added as the gift to the church of Messrs. Wheeler, Brothers, the contractors, by whom the whole of the restorations, past and present, have been performed. There are six windows still requiring painted glass.

SCHOOL-BUILDING NEWS.

Monks Eleigh.—A new school, erected in the Elizabethan style by Mr. Hawkins, builder, has been opened in this place. The school consists of two lofty rooms, one 42 ft. by 20 ft., and the other 16 ft. by 20 ft., and will afford accommodation for about 130 children.

Sibson-cum-Stibbington.—The new school built for the parish of Sibson-cum-Stibbington has been opened. The building has been erected by Messrs. Richardson, of Stamford, at the entire cost of the late Duke of Bedford, and it will be supported by the present Duke. The school stands midway in the village.

Bermondsey.—The memorial stone of new schools in connexion with St. James's Church, Spa-road, Bermondsey, has been laid by Canon Gregory. The building is designed by Mr. R. Hesketh, of London, and is intended to accommodate 192 boys and 172 girls. The cost is estimated at 1,350*l.*, of which 1,050*l.* have already been subscribed.

Manchester.—The foundation-stone of a new college for the reception of the Baptist students who are at present located at Chamber Hall, near Bury, has been laid in Brighton-grove, Rusholme, Manchester. The total frontage will be 115 ft., and the total depth 77 ft. Provision is made for the accommodation of about twenty-five students.

Padiham.—A new school-chapel has been opened at Hapton, Padiham. Four new Church schools, providing accommodation for 530 scholars, have been founded and completed in this parish since the passing of the Education Act of 1870. The last of the four has been opened at Hapton Bridge, with special services. This school, built by public subscription in the midst of a distant hamlet, will serve the threefold purpose of a day school, under a certificated teacher, a Sunday school, and a licensed chapel for Church services on Sunday and week-day evening. All classes have contributed liberally to the erection, which has cost nearly 1,100*l.*, and is of Gothic design by Mr. W. Waddington, architect, Burnley.

Kemble.—A new school building has been opened here. It has been erected, together with a teacher's residence, at the sole cost of Miss Gordon, the lady of the manor. The elevation of the building is "in rock work." There is a playground at the rear. The contractor was Mr. William Newcombe, of Kemble.

Retford.—New Wesleyan Sunday and day schools have been opened here. The new building, designed by Mr. William Liller, is in the Gothic style. It is located in Grove-street. The principal room is lofty, commodious, and well ventilated, and the convenience of the interior is much augmented by the addition of four or five ante-rooms, into which scholars may be draughted when the largest room is too much crowded.

Nottingham.—The foundation-stone of a new Congregational School has been laid in Kirke White-street. Mr. Simpson is the architect of the building, a portion of which faces Kirke White-street. It is considerably above water level, and on the entrances right and left there will be a green sward. The basement of the building is of brick-faced Bulwell stone, and supports a superstructure of dressed brick and Ancaster stone. The style is Decorated Gothic, and the school itself is 60 ft. long and 30 ft. broad. The height is about 30 ft., and the roof is composed of open timber. There are to be some large vestries behind, which may be used as class-rooms. There is a considerable portion of ground reserved for a chapel which will be built in due time.

Liverpool.—St. Peter's schools in Gilbert-street have been completed, and are in full working order. They are of a simple, solid kind, and consist of two large rooms, 70 ft. by 30 ft., with adjoining class-rooms and offices. The rooms are lofty, well lighted, and furnished with the most modern appliances for educational purposes. Accommodation is provided for 650 children. There are class-rooms, and retiring-rooms for mistresses and pupil teachers. Mr. Edmund Kirby was the architect; and the builders were Messrs. Nicholson & Syre, all of Liverpool.

Clapham.—A parochial school has been opened here. In its origination a committee was formed and plans obtained from Mr. John Day for schools to accommodate 122 children in two rooms, one for 72 boys and girls, and another for 50 infants, with teacher's residence detached; and tenders having been invited, Mr. R. Carter, of Bedford, entered into a contract to carry out the work, exclusive of cartage and school-fittings, for 1,146*l.*, the several occupiers of land at the same time undertaking to cart the bricks and other materials in proportions calculated upon their respective acreage. The buildings consist of a mixed school for boys and girls, 42 ft. in length and 19 ft. in width; an infant school, 25 ft. long by 16 ft. in width, with separate entrances for the boys, girls, and infants; these are fitted with hat and cloak rails, and each has a slate lavatory. Attached are places for coals and closets for pails, brushes, and other necessaries for cleaning and lighting the rooms, and Moule's patent earth-closets, with the latest improvements. A spacious earth-drying shed is also erected, containing the stove for drying the earth. The mistress's house is a detached building. The whole of the interior woodwork is stained and varnished. The interior walls of the schools are brickwork distempered, and are from floor to ceiling 17 ft. in height. The principals only are visible, the ceilings being carried under the common rafters and in a line with the collar-beam. Ventilation is provided by means of zinc tubes, conducting the vitiated air into a foul-air flue, which is carried up in the chimney-shaft, two wide openings being provided in the ceiling of the large, and one in the small room. Fresh air is admitted through grated apertures in the walls covered on the inside with fine perforated zinc. The walls are lined to the height of 5 ft. from the floor with matched and beaded boarding, and the whole of the interior woodwork is stained and varnished. Red bricks are used generally in the buildings, with bands and devices of Staffordshire blue bricks, and the window-heads, copings, weatherings, and corbels are of Bath stone. The roofs are covered with plain tiles from Mr. Franklin's kilns, Marston, near Ampthill. The windows throughout are the ordinary sashes as used in dwelling-houses. The buildings generally are very plain Domestic Gothic in style or character, as far as can be carried out, with roofs of a high pitch, and the western gable is surmounted by a turret, in which is a bell for the use of the school.

Leeds.—The Bishop of Brechin has laid the corner-stone of schools that are to be built in the parish of St. Saviour, in Cross Green-lane, Leeds. It is intended to make the new schools the centre of a district divided from the present extensive one of St. Saviour; and in order to complete this project, an iron church will shortly be erected. The piece of land on which the intended schools are to be erected has been presented by Mr. Francis Darwin, and the style of building is plain Gothic, from designs by Mr. D. Dodgson, architect, Leeds. The accommodation will be for 220 children, and the schools will be well heated and ventilated, and contain necessary lavatories, conveniences, &c. The total cost is estimated at about 1,150*l.*, towards which the sum of 800*l.* has already been subscribed.

Leek.—Christ Church School, Compton, has very lately been enlarged and reopened. The cost of the enlargement will be about 800*l.* Most of this sum has been given. Mr. Edgar, of London, was the architect, and the work has been executed by Mr. J. G. Smith, of Leek.

Fleckney.—The foundation-stone of a new national school has been laid at Fleckney, by Mr. A. Pell, M.P.

Burnley.—The opening of new Church of England schools, which have recently been erected in the village of Worsthorne, near Burnley, has just taken place. The old school, which has been erected forty years, has become far too small for the requirements of the place. The new building will accommodate 300 children; and the entire cost, when fully completed, will be nearly 1,600*l.* The school is built on the best site in the village, the land having been given by the Rev. W. Thursby, the late vicar of the parish, and the late General Scarlett. This is the only day-school in the parish. Between 1,400*l.* and 1,500*l.* of the cost of the building have been raised.

Books Received.

The Water Supply of Bombay; being a Report submitted to the Bench of Justices of that City. By their executive Engineer, Hector Tulloch, Major, Royal Engineers. London: printed by W. J. Johnson, Fleet-street. 1872.

In this voluminous and able report, the author does not advocate any one special scheme for the requisite improvement of the water supply to Bombay, although on a previous occasion he did suggest a project for impounding water in the Toolsee Valley, which was set aside by the justices, rightly, as Major Tulloch thinks, till fuller inquiry had been made on the whole subject. There have been various projects, such as those of Mr. Conybeare, Mr. Aitken, Mr. Walton, and Captain Tulloch himself. These projects are known by the names of the Kennery project, the Ewoor project, the Vehar lake extension project, the Kansa project, the Kamun project, and the Toolsee project. The author treats of all these projects respectively, ending with a summary and recommendations, after treating of the history of the Bombay water supply, describing

the country, and considering the questions of masonry *versus* earthen dams, masonry conduits *versus* iron pipes, and the advantages of a service reservoir, and the necessity for laying pipes above ground. The reporter recommends the bench either to carry out the Kennery and Toolsee projects for a supply of 8½ million gallons daily, or to carry out the Kansa project for a supply of 13 million gallons. The volume is illustrated by numerous maps and other plates.

The Strength of Materials and Structures. By John Anderson, C.E., LL.D. London: Longmans, Green, & Co. 1872.

One of the greatest mistakes that a capable writer can make, is the adoption of a misleading title, and this mistake has been made by Mr. Anderson. Dozens of persons reading the advertised title, "The Strength of Materials and Structures," will order this book, expecting to find it treating of the strength of all the materials used in buildings, and of the strength of buildings themselves, and will be apt, when they open it, and find that, with a trifling exception, it gives information only as to the strength of iron, and that the structures referred to are cast-iron pipes, tanks, and guns, to consider themselves taken in, and so will disregard the actual contents of the volume. The book includes a number of valuable experiments and much useful information within the limits the author has given it.

Miscellanea.

Freeing the Metropolitan Bridges.—At the last meeting of the Metropolitan Board of Works, the Works Committee presented a report stating that, in their opinion, it is expedient to free the toll-bridges within the area of the coal and wine duties by an extension of those duties, and recommending that the subject be referred back to the committee, with authority to confer with her Majesty's Government thereon. Mr. Newton, in moving the adoption of the report, stated that the whole duties produced a total of 315,000*l.* per annum, of which the city of London received a little less than 100,000*l.* a year, and the Board a little more than 200,000*l.* These charges would expire in 1888, and the committee proposed to ask for their reversion, in order to purchase the bridges of the metropolis. Mr. Deputy H. L. Taylor urged that, as the Corporation of London had had the control of the coal and wine dues for so many years, the Board might at least have consulted them before wishing to have the expenditure of the whole of them. Mr. Newton deprecated any idea of hostility to the Corporation, and would willingly co-operate with them. It was proposed to raise the money in the first instance by loan. The motion was carried by 31 to 2, only the City members voting against it.

The Sewerage Works, Kidderminster.—The memorial stone at the pumping-station for the Kidderminster sewerage has been laid by Ald. Jefferies, in the presence of a number of the members of the corporation. The pumping-station is a little way out of Kidderminster, on the Stourport-road, and covered tanks are to be erected to receive the daily discharge from the main sewer. From the tanks the sewage will flow into a well, and thence it will be pumped a distance of four miles, to the highest point of the sewage farm, near Stourport. The ceremony was the laying of a dressed stone in the stack of the chimney of the engine-house. Mr. Fairbank, C.E., on behalf of the contractor (Mr. Joseph Walker, of Crewe), presented Alderman Jefferies with a mallet and silver trowel, each bearing a suitable inscription, and the stone was then formally laid. Mr. Fairbank gave some account of the works, and said he thought that, when completed, they would have the best and cheapest sewerage and water works in the kingdom. At Doncaster they were going to spend 100,000*l.* in improving the water supply alone, while in Kidderminster they would have a complete system of sewerage and water supply, and a freehold sewage farm of 170 acres, for considerably less than that amount.

Fall of a Chimney.—At the works of Mr. Dougall Buchanan, metal refiner, Anderston, Glasgow, a chimney, between 60 ft. and 70 ft. high, has fallen through the roof of an engineering shop. One person was instantaneously killed, but, with this exception, the large number of men in the shop escaped.

Proposed Additions to the Surrey County Lunatic Asylums at Wandsworth and Brookwood.—The Committee of Visitors of the County Lunatic Asylum, at Wandsworth, recommended, at the recent Surrey Sessions held at Kingston, that a sum of 20,000*l.* be granted for the erection of additional buildings at the said asylum. The intention was to provide for about 50 men and 100 women. For that part of the buildings for 100 females, the estimate for work was somewhere about 9,000*l.* On the motion for the adoption of the report, it was moved, as an amendment, "That any further progress in this question be suspended for the next six months." The amendment was lost by 27 against 9, and the recommendation of the committee was afterwards agreed to. The report of visitors to the Asylum at Brookwood was next read. The Committee of Visitors submitted plans for the accommodation of 100 male and 300 female additional patients, and recommended that the said plans be carried out at an expense not exceeding 55,000*l.*, including architect's commission, salary of clerk of the works, furniture, clothing, and every other expense. The recommendation of the committee was adopted, without discussion.

Accidents.—Holborn Theatre has had a narrow escape. Between two and three o'clock on Saturday morning last a fire, attended with a great loss of valuable property, occurred on premises close to it in Brownlow-street. One of the inmates gave an alarm, and the other inmates, in order to reach the street, had to roll down the stairs to avoid the flames, which were then crossing the street and firing the front of the premises opposite as well as the side windows of the Holborn Theatre Royal. Several hours elapsed before the fire could be extinguished. The injury to the theatre was confined to the scorching of the side window frames and the breakage of window glass. Some slight damage was done to the contents by water and smoke. ——At Eagley, near Bolton, two men were killed at the Church of England school, in School-street, which was being enlarged. They were fixing flags in an upright position, each flag being 7 ft. 6 in. high, 4 ft. wide, and 5 in. thick: the men had got six of these fixed temporarily, and were in the act of placing the seventh, when the second flag gave way, knocking down all the other six like ninepins. The deceased were crushed beneath the flags, and were killed on the spot.

Reopening of the Lady Chapel in Chichester Cathedral.—The Lady Chapel of this cathedral has been restored and reopened as a memorial of the late Bishop Gilbert. Sir Gilbert Scott prepared the plans, and, except the colouring of the groining—remains of which are seen,—the chapel now stands almost as it left the hands of its builder in the thirteenth century. The builder, singularly, was another Bishop Gilbert, surnamed Leofardo. The work has been carried out by Mr. J. Marshall, of Chichester. The stone work of the chapel has been thoroughly restored, with the exception of the carving of the capitals of the restored vaulting shafts, the sedilia and the mullions of the windows, to accomplish which a fund is now being raised. Several traces of painting on the walls have been brought to light. The floor is paved with tiles, from patterns of old tiles found during the restoration.

Fall of a Circus Gallery.—An accident has occurred at Mr. Hengler's circus in Sheffield. The structure is of wood, and was only recently opened. The place was crowded, and during some acrobatic performances a gallery which ran across the passage from the stables to the arena, suddenly gave way, and from thirty to forty persons were precipitated to the ground, a distance of about 14 ft. A panic seized the remainder of the spectators, and a great many rushed from the building. Seven persons were taken to the General Infirmary, and a similar number to the Public Hospital. The full extent of the injuries sustained by some of the other persons has not been ascertained. One of the lady performers was much shaken and crushed.

Diocesan Surveyors, Norwich. — At a meeting of the archdeacons and rural deans, held under the presidency of the Bishop of the diocese, for the purpose of appointing Surveyors of Ecclesiastical Dilapidation for the Diocese of Norwich, the following gentlemen were re-elected:—E. L. Blackburn, of Bernard-street, Russell-square, London, architect; J. H. Brown, of Norwich, architect; and R. M. Phipson, of Norwich and Ipswich, architect.

Edinburgh.—According to the *Scotsman*, a committee of the Edinburgh Town Council, charged to report on a better organisation for accomplishing the sanitary business of the city, have agreed to recommend the appointment of a Public Health Committee to look after such matters as the supervision of burying-grounds, lodging-houses, and underground or overcrowded dwellings; the prevention of smoke nuisance; the consideration of proposals for the establishment of new manufactories, and supervision of manufactories already established; the inspection of workshops, bakehouses, stables, &c.; the adulteration of food and diseased meat; and the prevention or mitigation of epidemic disease.

New Ventilating Fan for Mines.—The Monkland coalmasters have just inaugurated a new and better system of ventilation for coal-mines. A pair of patent fans have been erected for providing ventilation for two coal-pits. The fans are of the ordinary construction, but slightly hollowed towards the middle. They measure 5 ft. in diameter, and are driven at a speed of 600 revolutions per minute, and 33,000 ft. of air are sent out by the fans every minute. There are two sets, driven by a pair of horizontal engines, of 12-in. cylinders, the motion being direct from the fly-wheel. The fans, once erected, are kept working at a very small sum compared with the great consumption of coal on the old system, while the first cost of the whole apparatus, including a pair of engines, boilers, &c., is only about 700*l.*

Sewage Irrigation, Windsor.—The drainage works for Windsor Castle and Frogmore House are approaching completion. At Old Windsor the Thames Conservators are erecting a new bridge over the navigation cut between the pumping station and the Ham, upon which the sewage farm is situated. The bridge will be of iron girders, supported upon buttresses of red brick, concrete, and stone. The pipes conveying the sewage from the station to the farm will be carried over the water on the bridge to the Ham bank, whence the liquid will be distributed over the field. The buttresses of the bridge are nearly finished, and the iron work will soon be placed in position. The pumping station is in a forward condition, while a number of soldiers from the Windsor garrison are engaged upon the earthwork of the irrigation field.

The Institution of Civil Engineers.—Mr. Thomas Howard, of the King and Queen Ironworks, Rotherhithe, who was for thirty-seven years an associate of this society, has bequeathed to it the sum of 500*l.*, free of legacy duty, which sum he has by will directed "to be invested and the interest thereof to be applied in such manner and under such conditions and instructions as the council of the said Institution may think most expedient, for the purpose of presenting periodically a prize or medal to the author of a treatise on any of the uses or properties of iron, or to the inventor of some new and valuable process relating thereto, such author or inventor being a member, graduate, or associate of the said institution."

Dundrannan House, Walsall.—This house is situated in a conspicuous and pleasant site on the outskirts of Walsall, and was commenced early in the spring, and is now approaching completion. It is built of local red pressed bricks, with white brick bands, with Hollington stone dressings, and the whole of the external walls are built hollow, and tied together with iron ties, and there are grey marble columns to the porch. There has not been any contractor for the works, but Mr. William Kirkpatrick, the owner, has bought the whole of the materials, and employed his own men to fix. The estimated cost is about 1,100*l.* Mr. Ralph Chamberlain, of Walsall, was the architect.

Sewage and Cement.—The Local Board of Tunstall, Staffordshire, instructed Mr. John Elliot, C.E. (of Newcastle), to inquire into all the recognised systems of dealing with sewage, and to report to them on the subject. After examination of the principal irrigation farms and of the different precipitation processes, Mr. Elliot has advised the board to adopt General Scott's process of precipitation and conversion of the product into cement, of which we have before spoken. The cement made by the process, Mr. Elliot said, was very good.

Institute of British Architects.—The new session will commence on Monday evening, November 4th.

A New Temperance Hall and Hotel at Barrow.—Last week a Temperance and Band of Hope Conference was held at Barrow, and at one of the meetings Sir James Ramsden, bart., the mayor, presided, and spoke strongly against drunkenness, which he said was one of the great drawbacks to the rising town of Barrow. It transpired in the course of the proceedings that a spacious temperance-hall in connexion with a hotel is about to be erected in the borough, and that Sir James Ramsden has given the site.

The Town Surveyor of Brighton.—The Town Council of Brighton have shown their estimation of Mr. Lockwood's talents and his services to the town in the office of town surveyor, by raising his salary from 400*l.* to 500*l.* a year. "Mr. Lockwood," says the local *Herald*, "has now filled the office of surveyor for fourteen years, in the course of which the town has made unprecedented progress, and demands have been made on his talents and energy, both as architect and surveyor, such as have never been exceeded in any previous epoch, if, indeed, equalled."

Sanitary Arrangements, Vienna Exhibition.—We are glad to hear that the whole of the sanitary arrangements of the Vienna Exhibition have been entrusted to Mr. George Jennings by Baron Schwartz Senborne, as also the water supply and the drainage of the Exhibition buildings and grounds. Mr. Jennings may well accept this as a compliment, and will, we know, endeavour, to the best of his ability, to be worthy of the trust reposed in him.

New Submarine Cables.—After overcoming many difficulties, Sir Charles Bright has just completed one of the most arduous of submarine telegraphic undertakings,—that of connecting the United States with the majority of the West India Islands, and thence with South America, by 3,600 miles of cable. There is now also direct communication by telegraph with Adelaide, in South Australia.

The Surveyorship of St. George's, East. There are sixteen candidates for the office of surveyor to the Vestry of St. George's, East, rendered vacant by the death of Mr. Andrew Wilson. Among these are Mr. George Wilson, son of the late surveyor; Mr. Arthur Harston, architect; and Mr. C. R. Peters, son of an influential member of the vestry.

New National Theatre for Copenhagen. The King of Denmark has laid the foundation stone of a new national theatre, the whole of the royal family and the heads of the public departments being present. The members of the opera opened the proceedings by singing a hymn, after which the Minister of Public Worship delivered an inaugural address.

Vaults in the Roadway.—The St. George's, Hanover-square, Vestry have refused the application of Mr. Thompson, of No. 12, Canterbury-place, Lambeth-place, for permission to extend a vault at No. 46, Mount-street, Grosvenor-square, 12 ft. under the roadway.

Pictures.—Private views will be given on this Saturday (26th) of the Exhibition of Cabinet Pictures in the Dudley Gallery, Egyptian Hall; and of the Winter Exhibition of British and Foreign Artists, 120, Pall-mall.

Italian Marble.—The Italian journals state that the exportation of marble from Italy continues to increase, as is shown by the shipments from the port of Genoa during the first eight months of the present year.

Co-operation.—The *Yorkshire Post* states that the workmen in the Sheffield trades have combined for the purpose of erecting works and manufactories on their own account.

TENDERS

For the erection of two villa residences, at West Cowes, Isle of Wight. Mr. Thos. Dashwood, architect:—

Thomas	£2,768 0 0
Ball	2,695 0 0
Jolliffe	2,570 0 0
Sibley	2,489 0 0
Barton	2,345 0 0
Meader (accepted)	2,270 0 0

For new vicarage, boundary-walls, &c., at Womenswold, Kent, for Rev. Mr. Dimock. Mr. E. W. Stephens, architect:—

H. & G. Denne	£2,054 6 0
Wallis & Clement	1,993 0 0
Wilson	1,918 16 6
Adcock & Rees	1,893 13 11
Church	1,719 3 1

For ice-well, at Islington, for Mr. Carlo Gatti. Mr. Bolton, architect. Quantities by Mr. Plimsaul:—

Beaumont	£2,090 0 0
Hill & Son	1,923 0 0
Goodman	1,889 0 0
Gibson, Brothers	1,849 0 0
Williams	1,777 0 0
Capps & Sanders	1,745 0 0
Mann	1,735 0 0
Hatchett & Walker	1,675 0 0
Mansbridge	1,655 0 0
Carter & Son	1,640 0 0

For alterations to the Royal Oak, St. Luke's, for Messrs. Truman, Hanbury, & Buxton. Mr. Williams, architect:—

Stephenson	£282 0 0
Marr	226 0 0
Capps & Co.	222 0 0

For new premises, in Plough-court, Lombard-street. Mr. J. E. Saunders, architect. Quantities supplied by Messrs. Osborn & Russell:—

Pritchard	£8,465 0 0
Myers	8,453 0 0
Colls	8,421 0 0
Perry & Co.	8,350 0 0
Killby	8,131 0 0
Brass	7,996 0 0
Mansbridge	7,950 0 0
Perry, Brothers	7,937 0 0
Trollope & Son	7,793 0 0

For pulling down and rebuilding Nos. 416 to 419, Oxford-street. Mr. H. Baker, architect. Quantities by Messrs. Richardson & Waghorn:—

Wheeler	£8,084 0 0
Myers & Son	7,873 0 0
Watson, Brothers	7,670 0 0
Dove, Brothers	7,495 0 0
Manley & Rogers	7,127 0 0
Henshaw	7,085 0 0
Mansbridge	6,799 0 0
Hyde	6,614 0 0
Scrivener & White	6,590 0 0
Cullum	6,336 0 0

For sundry alterations and additions at the Inns of Court Hotel, Holborn, for the Midland Investment Corporation. Messrs. Lockwood & Mawson, architects. Quantities by Mr. W. Brown:—

Wagstaff	£2,695 0 0
Hill, Keddell, & Waldram	2,613 0 0
Sewell	2,546 0 0
Longmire & Burge	2,455 0 0
Boyce	2,410 0 0

For general repairs, cleaning, and painting throughout, at the Inns of Court Hotel, Holborn, for the Midland Investment Corporation. Messrs. Lockwood & Mawson, architects. Quantities by Mr. W. Brown:—

Boyce	£2,404 0 0
Hill, Keddell, & Waldram	2,388 0 0
Wagstaff	2,300 0 0
Sewell	2,237 0 0
Longmire & Burge	2,143 0 0

For the erection of five cottages, at Chiselhurst, Kent, for Mr. O. Edwards. Mr. W. Mundy, architect. Quantities supplied:—

Wood	£1,546 0 0
Winborne	1,458 0 0
Mair	1,348 0 0
Grover	1,288 0 0
Lark	1,174 0 0
Brown	1,089 0 0
Tapsell	1,052 10 0
Dyer	1,050 0 0

For the erection of boat-house, on the bank of the Thames, at Putney, for Messrs. Robinson & Sims. Mr. G. Edwards, architect. Quantities not supplied:—

Hawkes	£567 0 0
Gibbs	545 0 0
Aries (accepted)	520 0 0

For the erection of cow-stables, at Putney, for Mr. F. J. Morrison. Mr. R. Niblett, architect. Quantities supplied:—

Adamson & Sons	£329 0 0
Aviss & Co.	318 0 0
Aries (accepted)	280 0 0

For works, at 94, North-road, Brighton, in new shop, and alterations and additions. Mr. John Hill, architect:—

Newnham	£144 0 0
Barnes	118 0 0
Hall (accepted)	115 0 0

For church, at Prestonville, Sussex. Mr. John Hill, architect:—

Hall	£2,100 0 0

For mansion, for the Rev. W. Smith, Woolmer Forest, Hants. Mr. John Hill, architect. Quantities supplied by Messrs. Lansdowne & Pollard:—

For Walling.

Drake's Concrete Company	£1,292 0 0

For other Trades.

Kemp & Pocock	4,649 15 0

For drainage work, cesspits, and pumping machinery, at Industrial Schools, Mitcham. Mr. H. Saxon Snell, architect:—

Wall (accepted)	£823 0 0

For painting and general repairs, at the Shrubbery, Shooter's Hill, for Mr. Carter. Mr. G. Judge, jun., architect:—

Blake & Ramplen (accepted)	£262 0 0

For erecting residence, at Cudham, Kent, for Mr. S. Packman:—

Blake & Ramplen	£527 0 0

For about 500 ft. of garden-wall, greenhouse, orchard-house, &c., for Mr. H. C. Potter, Romsey, Hants. Quantities not supplied:—

Crook (accepted)	£520 0 0

For alterations, at the Castle Hotel, Childs-hill, Finchley-road, for Mr. Randle. Mr. George Stooks, architect:—

Cottle	£145 10 0
Cook	145 0 0
Levey	145 0 0
Stovel	128 0 0
Heath (accepted)	122 10 0

For Pewtering.

		Allow for Old Pewter.
Rich	£68 17 6	£14 4 6
Richards	63 17 6	10 0 0
Cottle	56 10 0	10 0 0
Wright	53 10 0	11 0 0
Heath	52 0 0	
Cox (accepted)	51 0 0	10 0 0

For loose boxes, Horstead Hall, near Norwich, for Mr. Edward Birkbeck. Mr. John Norton, architect:—

Newell	£1,810 10 0
Downing	1,452 7 6
Browne & Bailey	1,447 0 0
Lacey	1,387 10 0
Cornish	1,370 0 0

Tenders for double stables, Crystal Palace Park Estate. Mr. John Norton, architect:—

Goodair	£923 0 0
Gooding	850 0 0
Hughesdon	800 0 0
Lord	772 0 0
Aitchison & Walker	765 0 0

For the City Temple, Holborn Viaduct. Messrs. Lockwood & Mawson, architects. Quantities supplied by Mr. D. J. Brown:—

—	For main Building, if in Bath Stone.	For Tower, if in Bath Stone.	Extra on main Building, if in Portland Stone.	Extra on Tower, if in Portland Stone.	Deduct, if West Elevation be in Brickwork, instead of Bath Stone.
	£	£	£	£	£
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Gough	29,500	2,200	5,300	3,343	900
Kirk	26,799	2,984	2,320	930	670
Cullum	25,960	2,360	2,000	920	500
Wagstaff	25,750	2,450	3,360	925	567
Carter	25,670	2,500	2,000	830	400
Perry	25,624	2,090	3,110	923	443
Wagner	25,113	2,435	3,808	990	507
Capps	24,935	2,089	2,961	816	450
Henshaw	24,665	2,320	3,190	900	540
Gibson	24,662	2,254	2,123	230	351
Wicks & Bangs	24,300	2,300	3,500	969	500
Myers	24,270	2,174	9,000	2,939	384
Roberts	23,990	2,300	2,650	700	700
Nutt	23,950	2,150	1,750	2,750	448
Mansbridge	23,436	2,282	2,461	752	510
Waterson & Co.	23,100	2,200	4,100	1,070	—
Kingston	21,202	1,880	1,600	2,292	40

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J. M. Drago, Treasurer of the National Government.

Jose Tomas Rojo.

Juan M. Alvarez.

A true copy—A. M. Bell.

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THE DARLINGTON FEVER HOSPITAL.

Darlington, October 16, 1872.

Sir,—You having requested from me, as the writer of the letter under the above heading, which appeared in the "Builder" of the 30th March last, a Retractation of the Statements therein, and an Apology for having imputed to yourself, and the other members of the Hospital Committee of the Darlington Town Council, improper motives in awarding the premium to the successful architect, I beg to assure you that it was not my intention in such letter to impute any improper motives. If any such imputations have been, or can be, implied from the letter as written by me, I gladly withdraw them, and much regret that the letter has been construed in a sense so different from what was intended.—Yours respectfully,

J. P. PRITCHETT.

Charles Janson, esq. Mayor of Darlington.

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A. B. CREEKE, Town Clerk.
Corporation Offices, 7th October, 1872.

MONTGOMERYSHIRE COUNTY SURVEYORSHIP.—The office of COUNTY SURVEYOR being now VACANT, Candidates for the APPOINTMENT are requested to send in their applications and testimonials to the Clerk of the Peace, at his Office, in Welshpool, on or before the 29th day of NOVEMBER next. Candidates are required to have a practical and theoretical knowledge of construction in civil engineering and architecture.

The salary of the County Surveyor is 200*l.* per annum, and he will be required to reside in the county.

ROBERT DEVEREUX HARRISON,
Deputy Clerk of the Peace.
Welshpool, October 17th, 1872.

BIGGLESWADE UNION.—The PUBLIC HEALTH ACT, 1872.—The Board of Guardians, as the Rural Sanitary Authority of the above Union, are desirous of receiving APPLICATIONS for the APPOINTMENT of INSPECTOR of NUISANCES for the whole of the Union, which contains an area of 58,950 acres, and a population of 27,887. Salary, 250*l.* a year, without any allowance or extras. The Inspector will be required to devote the whole of his time to the duties of his office, and to make a perfect sanitary survey of the whole district, and report generally on its condition and requirements, as well as to prepare all plans and specifications, superintend all works, and generally perform all the duties of Inspector prescribed by the above Act, and the other Acts incorporated therewith.

Applications, stating age and previous occupation, with recent testimonials, must be sent to me on or before TUESDAY, the 29th day of OCTOBER inst. Canvassing the Guardians in any way is strictly prohibited, and any candidate, either by himself or his friends, pursuing such a course, will be deemed disqualified. Any further information may be obtained on written application to me.

By order of the Board, THOMAS J. HOOPER, Clerk.
Biggleswade, Beds. October 4th, 1872.

THE Directors of the East and West India Dock Company are desirous of obtaining the services of a Gentleman to undertake the ARRANGEMENT, CONSTRUCTION, REPAIRS, and SUPERINTENDENCE of all BUILDINGS, Docks, and Machinery now existing or hereafter to be erected; also the Superintendence and Direction of the Engineer's Office and the staff of Mechanics. Salary 500*l.* a year, rising by annual increments of 50*l.* to 700*l.* Preferable age 25 to 40. Gentlemen desirous of becoming candidates will be furnished with the necessary form of application, on addressing the Secretary in writing. No personal application will be attended to, and any canvass of the Directors, either directly or indirectly, will be considered as a violation of their wishes. The applications, accompanied by testimonials, must be sent in on or before the 1st DECEMBER.—By order of the Court,

J. L. DU PLAT TAYLOR, Secretary.
East and West India Dock-house, Billiter-square,
22nd October, 1872.

WANTED, in an Architect's and Surveyor's Office, a JUNIOR ASSISTANT.—Apply by letter, stating age, experience, and salary required, addressed ARCHITECT, care of Mr. Pitcher, 3, Warwick-lane, E.C.

WANTED, an experienced ASSISTANT. One who can abstract and bill thoroughly, for the general work of a Quantity Surveyor's Office.—Address, stating age, references, and salary required, to 547, Office of "The Builder."

WANTED, a thoroughly efficient BUILDER'S CLERK, accustomed to making estimates and keeping measured accounts, extra works, &c.—Apply by letter, with references, &c. to 581, Office of "The Builder."

WANTED, a thoroughly practical BRICKLAYER to BUILD small MEMORIAL CHAPEL and LYCH GATE (labour only), at Woking Cemetery.—Apply, BUILDER, 81a, Bishopsgate-street Within, London, E.C.

WANTED, a respectable YOUTH, as an APPRENTICE.—Apply to C. & L. Upholsterers and Decorators, 109, Fleet-street, London.

WORKING FOREMAN of CARPENTERS.—WANTED, an energetic Man. Must be thoroughly practical, and capable of estimating.—Address, stating age and wages required, to 546, Office of "The Builder."

WANTED, an experienced GLASS-CUTTER, and a good GLAZIER. Good references indispensable.—Address, WILLIAM N. FROY, 146, King-street West, Hammersmith, London, W.

ONE HUNDRED CABINETMAKERS WANTED in a Non-Society Shop, to work on DEAL and ASH FURNITURE, for Bedrooms. Wages, piecework. Average, 2*l.* 10s. to 3*l.* 10s. per week. Twelve months' work guaranteed.—Apply to JOHN DYER & CO. 2, Northampton-street, Essex-road, Islington, W.